

p3E1.2 DELETION SERIES PLASMIDS AND EXCISION ASSAY RESULTS

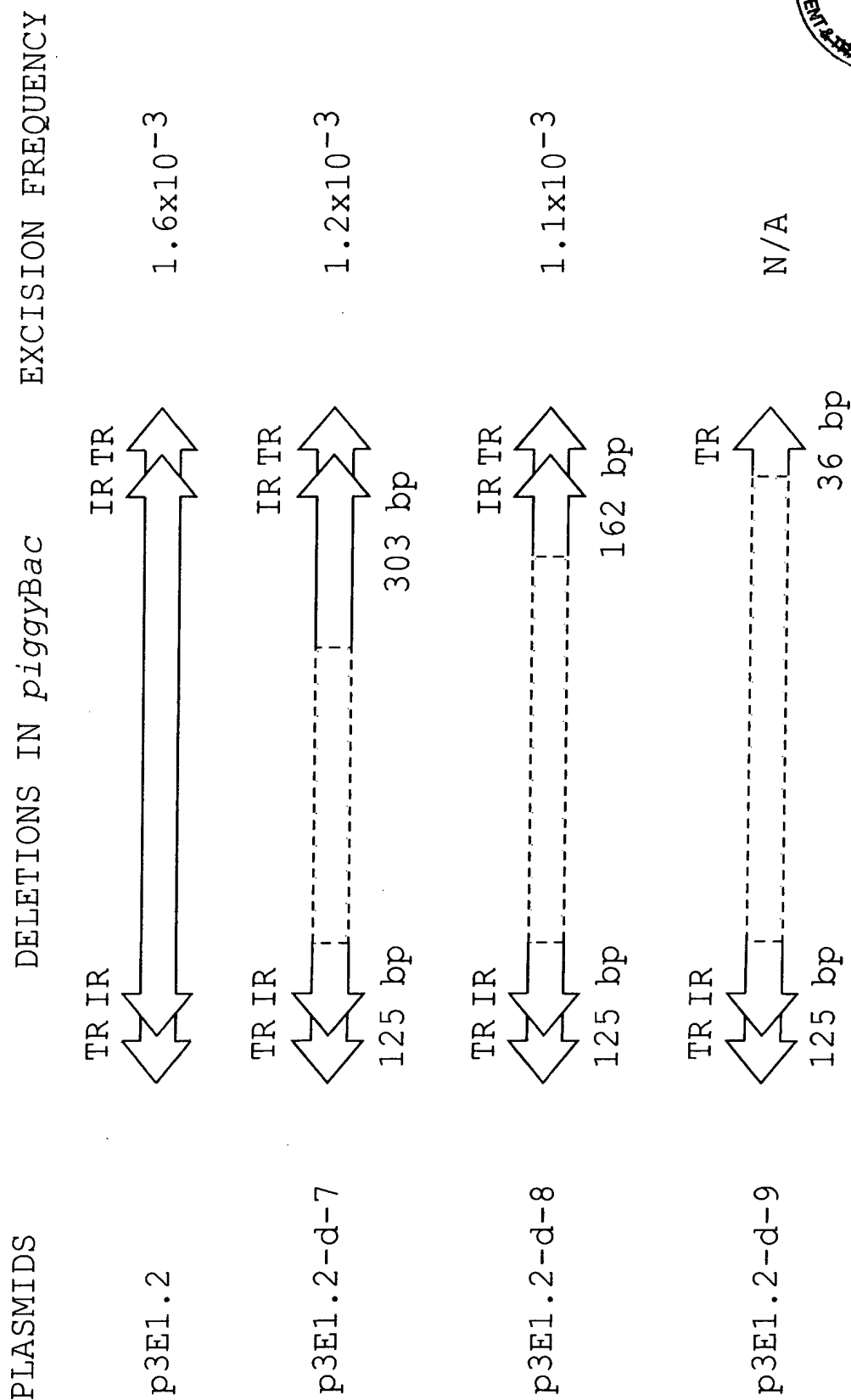


FIG. 1



PLASMIDS	INSERTION SEQUENCE	IPTA FREQUENCY
pIAO-P/L-TTAA	TTAA	0
pIAO-P/L-TTAA2	TTAATTAA	0
pIAO-P/L	TTAATCTAGAGGATCCTCTAGATTAA (XbaI/BamHI/XbaI) -- (SEQ ID NO:35) --	5.4 x 10 ⁻³
pIAO-P/L-18 bp	TTAATCTAGACGTACGGCGAGCTTAA -- (SEQ ID NO:36) --	1.0 x 10 ⁻⁶
pIAO-P/L-22 bp	TTAATCTAGCTAGTACTAGAACTAGATTAA -- (SEQ ID NO:37) --	3.6 x 10 ⁻⁶
pIAO-P/L-40 bp	TTAATCTAGTTCTAGACGTACGGCGCCTAGTACTAGCTAGATTAA -- (SEQ ID NO:38) --	2.5 x 10 ⁻⁵
pIAO-P/L-55 bp	TTAATCTAGTTCTAGACTGCGCGTCTCTAGACGTACGGCGGCACCTA- GTACTAGCTAGATTAA -- (SEQ ID NO:39) --	1.2 x 10 ⁻⁴
pIAO-P/L-73 bp	63bp of Lambda PvuII fragment between XbaI sites of pIAO-P/L	1.3 x 10 ⁻⁴
pIAO-P/L-212 bp	63 bp + 141 bp of Lambda PvuII fragment between XbaI sites of pIAO-P/L	3.1 x 10 ⁻⁴
pIAO-P/L-354 bp	43 bp of Lambda PvuII fragment between XbaI sites of pIAO-P/L	2.9 x 10 ⁻⁴
pIAO-P/L-589 bp	579 bp of Lambda PvuII fragment between XbaI sites of pIAO-P/L	3.2 x 10 ⁻⁴
pIAO-P/L-2.2 kb	2.2 kb of Lambda HindIII fragment between XbaI sites of pIAO-P/L	3.4 x 10 ⁻⁴

FIG. 2(A)

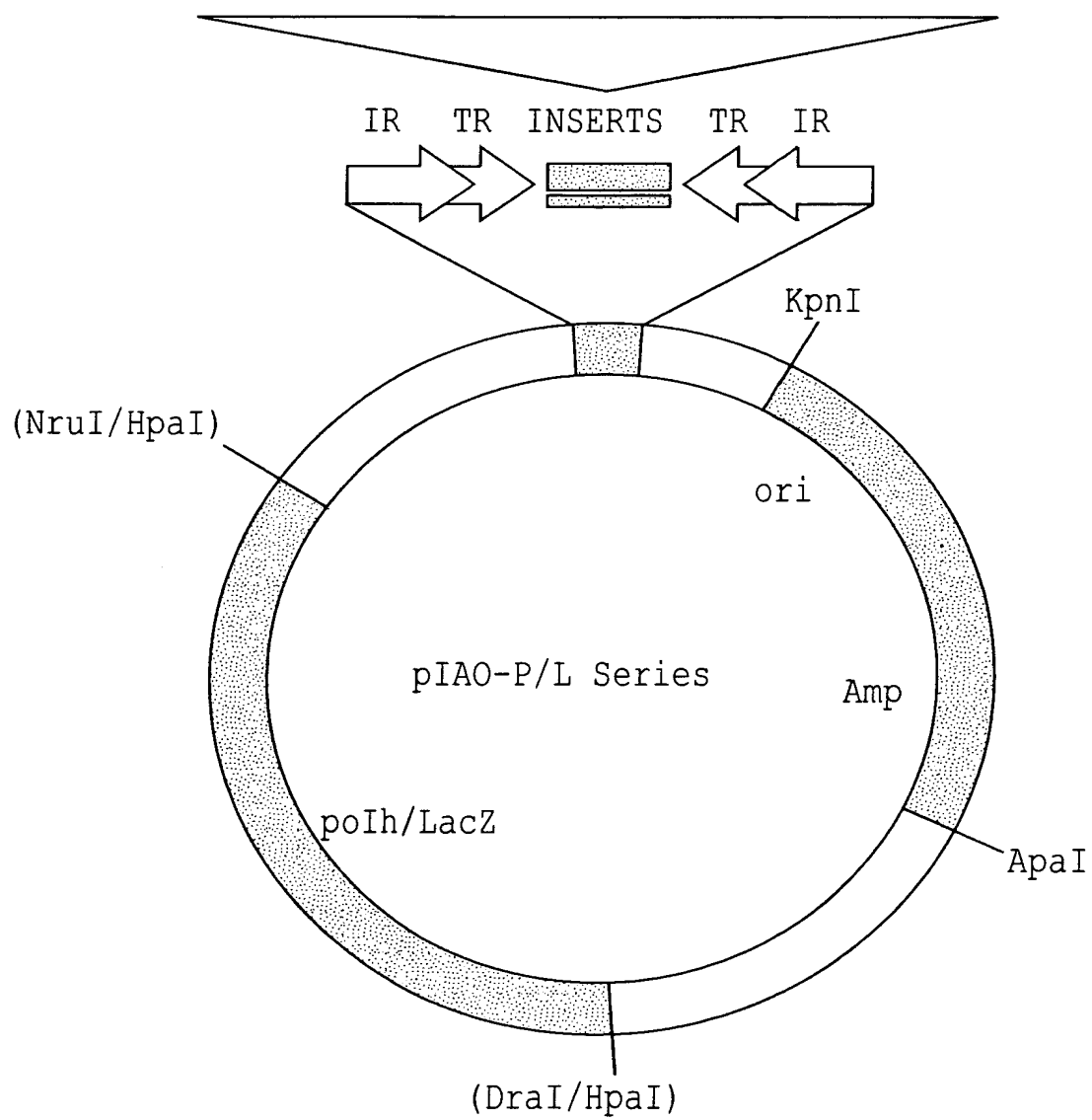


FIG. 2(B)

Sequence Range: 1 to 7670

100 AACGCGGGGAGAGGCGGTTTGGCGTATTGGGCGCTCTCCGCTTCCCTCGCTCACTGACTCGCTCGGCTCGGTCGTTCCGCTGCGGCGAGCGGTATCAGC

200 TCACTCAAGGCGGTAATACGGTTATCCACAGAAATCAGGGGATAACGCAGGAAGAACAATGTAGCAAAAGGCCAGCAAAAGCCAGGAACCGTAAAAAG
>Ori

300 |
|
GCCGCGTTGCTGGCGTTTTTCCATAGGCTCGGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAA

400 GATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGGGCTCTCCTGTTCGACCCCTGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAGCGT

500 GGCGCTTCTCAATGCTCAGCGTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCGTTTCAGCCCCGACCCG

600 TGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGT

700 ATGTAGGCGGTGCTACAGAGTCTTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTCGGCTCTGCTGAAGCCAGTTACCTT

800 CGGAAAGAGTTGGTAGCTCTTGATCCGGCAACAAACCCGCTGGTAGCGGTGGTTTTTTTGTTCGAAGCAGCAGATTACGCCGAGAAAAAAGGA

900 TCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAAACTCACGTTAAGGATTTTGGTCATGAGATTATCAAAAAGGATCT

1000 TCACCTAGATCCTTTTAAATGAAAGTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGC
<W H K I L S A
< AMP RESIST

FIG. 2(C1)

1100
 ACCTATCTCAGCGATCTGTCTATTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGAGGGCTTACCATCTGGCCCCAGT
 <G I E A I Q R N R E D M T A Q S G T T Y I V I R S P K G D P G L
 < AMP RESIST

1200
 GCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTATCAGCAATAAACAGCCAGCCGGAAGGGCCGAGCGCAGAAAGTGGTCTGTGCAACTT
 <A A I I G R S G R E G A G S K D A I F W G A P L A S R L L P G A V K
 < AMP RESIST

1300
 TATCCGGCTCCATCCAGTCTATTAAATTGTTGCCGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTCCGCAACGTTGTTGCCATTGCTACAGGCAT
 <D A E M W D I L Q Q R S A L T L L E G T L L K R L T T A M A V P M
 < AMP RESIST

1400
 CGTGGTGCACGCTCGTCGTTGGTATGGCTTCATTACGCTCCGGTTCCCAACGATCAAGCGGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTT
 <T T D R E D N P I A E N L E P E W R D L R T V H D G M N H L F A T
 < AMP RESIST

1500
 AGCTCCTTCGGTCCCGATCGTTGTCAGAAGTAAGTTGCCCGCAGTGTATCACTCATGTTATGGCAGCACTGCATAAATTCTTACTGTCTATGCCAT
 <L E K P G G I T T L L L N A A T N D S M T I A A S C L E R V T M G D
 < AMP RESIST

1600
 CCGTAAGATGCTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGGCAGCCGAGTTGCTCTTGCCCGCGCTCAATACGGGA
 <T L H K E T V P S Y E V L D N Q S Y H I R R G L Q E Q G A D I R S
 < AMP RESIST

1700
 TAATACCGCGCCACATAGCAGAACTTTAAAGTGCTCATCATTTGGAACCGTTCTTCGGGGCGAAACCTCTCAAGGATCTTACCGTGTGAGATCCAGT
 <L V A G C L L V K F T S M M P F R E E P R F S E L I K G S N L D L
 < AMP RESIST

FIG. 2(C1) CONT.

1800
TCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAACAGGAAGGCAAAATGCCGCAAAAA
<E I Y G V R A G L Q D E A D K V K V L T E P H A F V P L C F A A F F
< AMP RESIST

1900
AGGGAATAAGGGCGCACACGGAAATGTTGAATACTCATCTCTCCTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACAT
<P I L A V R F H Q I S M -- (SEQ ID NO:58) --
< AMP RESIST

2000
ATTTGAATGTATTAGAAAAATAAACAATAGGGTTCGGCGCACATTTCCTCCGAAAAAGTGCCACCTGACGTCTAAGAAACCATTTATTATCATGACATTA

2100
ACCTATAAAAAATAGCGGTATCACGGGGCCCTGAGGTGAACCAATTGTCACACGTAATATTACGACAACACTACCGTGCACAGGCTTTGATAACTCCTTCACG
<R Y F Y A Y * P A R L H V L Q * V Y Y * S L * R A C A K I V G E R
< ORF1 N-TERM [SPLIT]

2200
TAGTATTCACCGAGTGGTACTCCGTTGGTCTGTGTTCCCTCTTCCCAAATAAGGCATTCCATTATCATATATACTTCGTACCACCTGTCACACATCATGAGGA
<L I * R T T S R Q D T N R K G F L A N W K D Y V E Y W Q * V D H P
< ORF1 N-TERM [SPLIT]

2300
TTTTTATCCATACTTACTTGGCTTGTTTGGGATATACATCCTAAACGGGACACCGTCCCTCTAAACCAAGTAACCTGTTTCATCTATGGTCAAATGAGCCCC
<N K N W V * K A Q K P Y V D * V S V T R * F W T V T * R H D F S G R
< ORF1 N-TERM [SPLIT]

2400
TGGAGTGTAAATTTGTATGCACTGATGGATAAAGAGATCCCATATTTTCTAACAGGAGTAAATACATCGTTTCTCGAAGTGTGGCCCGTATACTTTIG
<S H L K T H V S P Y L S G M N K * C S Y I C R K R S T H A T Y K Q
< ORF1 N-TERM [SPLIT]

FIG. 2(C1) CONT.

2500 TCATCCATTCTAAGACATCGTATCAAAAAATCCAAACGATCCACAGACTCATTACAGAGACGTACACATTGACAAAGATCGATCCAAAGAGGTCACTG
 < * G N * S M T D F F G F R D V S E N C L R V C Q C L D I W L P * R
 < ORF1 N-TERM [SPLIT]

2600 TGGACATGTGGTTATCTTTCTCACTGCTGTGCATTACCAGAAATACCAAGAAAGCATAGATTTCATCTTCATTCTGTCACGAAATGTAGCACCTGTCA
 < H V H P * R K E S S D N G S Y W L F C L N * R * E H * S I Y C R D Y
 < ORF1 N-TERM [SPLIT]

2700 AGATTCCCGACGTTTCAATGATATCTCAGCATTTGTCCATTTTACAATTTCCGAAATTTATCTCATCAGTAAAAAATAGTTTGAAGCATATAAAGTGGGTCA
 < I G S T E I I D * C K D M K C N A F N D * * Y F I T Q L M F T P *
 < ORF1 N-TERM [SPLIT]

2800 TATATATTGCGGCACATACGGCTCGGACCTCTTTGAGATCTGACAATGTTCAGTGCAGAGACTCGGCTACCGCTCGTGGACTTTGAAGTTAAATTCAGAT
 < I Y Q P V Y A D S R K S I Q C H E T C L S P * R E H V K F N --(SEQ ID NO:59) --
 < ORF1 N-TERM [SPLIT]

2900 ATAAAGACGCTGAAAAATCATTTGATTTTCGCTCTAACATACCACCCTAAAGATTATAAATTTAATGAATTTATAAATACGTACAACAATTGCTGTAA
 3000 TCAACAACGCACAGAATCTAGCGCTTAATAATGTACTAATAACAATGTATCGTGTTTAAATACGCCGGACCAGTGAACAGAGGTGCGTCTGGTGCAAAAC
 3100 TCCTTTACTTTGAACACCAGGAAACTTCAAGGAGAATTTCCCTCCTCTTCAGCAGAGTCGGTACCGGTACCCCGGGGATCCCCCCTGCCCGGTATTATT
 3200 ATTTTTCACACACCACTGGTAATGGTAGCGACCGGCTCAGCTGGAATTCGCCCGGATCTGACGGGCTCCAGGAGTCGTGCCCAATCCCCAT
 < K Q C W V L Q Y H Y R G A S L Q F E A S V S P S W S D D G G I G M
 < LACZ

FIG. 2(C1) CONT.

3300
 ATGGAACCGTCGATATTACGCCAATGTCCTTCTTCCGCGTGCACGAGATGGCGATGGCTGGTTTCCATCAGTTGCTGTTGACTGTAGCGGCTGATGTTG
 <H F G D I N L W T G E E A H L L H R H S T E M L Q Q Q S Y R S I N
 < LACZ

3400
 AACTGGAAGTCGCCGCCACTGGTGTGGGCCATAATTCAATTCCGGCGTCCCGCAGCGCAGACCGTTTTCGCTCGGGAAGACGTACGGGGTATACATGT
 <F Q D G R W Q H P G Y N L E R T G C R L G N E S P F V Y P T Y M D
 < LACZ

3500
 CTGACAAATGGCAGATCCCAGCGGTCAAACAGCGCGCAGTAAGCGGTCCGGGATAGTTTCTTGGGGCCCTAATCCGAGCCAGTTTACCCGCTCTGCTAC
 <S L P L D W R D F C A A T L R D P Y N E Q P G L G L W N V R E A V
 < LACZ

3600
 CTGCGCCAGCTGGCAGTTCAGGCCCAATCCGCGCCGGATGCGGTGATCGCTGCCACTTCAACATCAACGGTAATCGCCATTTGACCACCTACCATCAATC
 <Q A L Q C N L G I R A P H P T D S A V E V D V T I A M Q G S G D I
 < LACZ

3700
 CGGTAGGTTTTCCGGCTGATAAATAAGGTTTTCCCTGTGCTGCCACGCGTGAGCGGTGTAATCAGCACCCGCATCAGCAAGTGATCTGCCCGTGCACT
 <R Y T K R S I F L T K G Q H Q W A H A T T I L V A D A L T D A T C Q
 < LACZ

3800
 GCAACAACGCTGCTTCGGCCTGGTAATGGCCCCGCCCTTCCAGCGTTCCAGCCAGCGTTAGGGTCAATCGGGTTCGCTTCACTTACGCCAATGTCGTT
 <L L A A E A Q Y H G A A K W R E V W A N P D I R T A E S V G I D N
 < LACZ

3900
 ATCCAGCGGTGCACGGGTGAAGTATCGCGCAGCGCGGTCAAGCAGTTGTTTTTATCGCCAATCCACATCTGTGAAGAAGCCTGACTGGCGGTTAAAT
 <D L P A R T F Q D R L P T L L Q K K D G I W M Q S L F G S Q R N F
 < LACZ

FIG. 2(C1) CONT.

4000
 TGCCAACGCTTATTACCCAGCTCGATGCAAAATCCATTTCGCTGGTGGTCAGATGCGGATGGCGTGGACCGCGGGGAGCGTCACACTGAGGTTTT
 <Q W R K N G L E I C F D M E S T L H P I A H S A A P L T V S L N E
 < LACZ

4100
 CCGCCAGACGCCACTGCTGCCAGGCGCTGATGTGCCCCGCTTCTGACCATGCGGTGCGGTTCGGTTGCACCTACCGCTACTGTGAGCCAGAGTTGCCCGGC
 <A L R W Q Q W A S I H G A E S W A T A N P Q V V R V T L W L Q G A
 < LACZ

4200
 GCTCTCCGGCTGCGGTAGTTCAGGCAGTTCAATCAACTGTTTACCTTGTGAGCGCACATCCAGAGGCACCTTACCGCTTCCAGCGGCTTACCATCCAGC
 <S E P Q P L E P L E I L Q K G Q P A V D L P V E G S A L P K G D L
 < LACZ

4300
 GCCACCATCCAGTGCAGGAGCTCGTTATCGCTATGACGGAACAGGTATTGCTGGTCACTTCGATGGTTTGCCCGGATAAACGGAACCTGGAATAACTGCT
 <A V M W H L L E N D S H R F L Y E S T V E I T Q G S L R F Q F F Q Q
 < LACZ

4400
 GCTGGTGTTTTCCGTCAGCGCTGGATGCGGCTCGGCGTTCGGAAGACCAAGACCAGACCGTTTCATACAGAACTGGCGATCGTTTCGGCGTATCGCCAAAATC
 <Q H K A E T L A P H P T R D A F V L G N M C F Q R D N P T D G F D
 < LACZ

4500
 ACCGCCGTAAGCCGACCGGTTGCCGTTTTCATCATATTTAATCAGCGACTGATCCACCCAGTCCCAGACGAAGCCGCCCTGTAAACGGGGATACTGA
 <G G Y A S W P N G N E D Y K I L S Q D V W D W V F G G Q L R P Y Q
 < LACZ

4600
 CGAAACGCCCTGCCAGTATTAGCGAAACCGCCAAGACTGTTACCCATCGCGTGGCGGTATTTCGCAAGGATCAGCGGGCGGCTCTCTCCAGGTAGCGAAA
 <R F A Q W Y K A F G G L S N G M A H A Y E C L I L P R T E G P L S L
 < LACZ

FIG. 2(C1) CONT.

4700
 GCCATTTTGTGACCATTTTCGGCACAGCCGGGAAGGCTGGTCTTTCATCCACCGCGGTACATCGGGCAAATAATATCGGTGGCCGTGGTGTCTGGC
 <W K K I S W K P V A P F P Q D E D V R A Y M P C I I D T A T T D A
 < LACZ

4800
 TCCGCGCGCTTCATACTGCACCGCGGGGAAGGATCGACAGATTTCATCCAGCGATACAGCGGTCGTGATTAGCGCCGTGGCCTGATTTCATCCCCAGC
 <G G G E Y Q V P R S P D V S K I W R Y L A D H N A G H G S E N G L
 < LACZ

4900
 GACCAGATGATCACACTCGGGTGATTACGATCGCGCTGCACCATTCGCGTTACGCGTTCGCTCATCGCCGGTAGCCAGCGCGGATCATTCGGTCAGACGAT
 <S W I I V S P H N R D R Q V M R T V R E S M A P L W R P D D T L R N
 < LACZ

5000
 TCATTGGCACCATGCCGTGGGTTTCAATATTGGCTTCATCCACCACATACAGGCCGTAGCGGTGCACAGCGTGTACCACAGCGGATGGTTCGGATAATG
 <M P V M G H T E I N A E D V V Y L G Y R D C L T Y W L P H N P Y H
 < LACZ

5100
 CGAACAGCGCACGGCGTTAAAGTTGTTCTGTTTCATCAGCAGGATATCCTGCACCATCGTCTGCTCATCCATGACCTGACCATGCAGAGGATGATGCTCG
 <S C R V A N F N N Q K M L L I D Q V M T Q E D M V Q G H L P H H E
 < LACZ

5200
 TGACGGTTAACGCCCTCGAATCAGCAACGGCTTGCCGTTTCAGCAGCAGACACCATTTTCAATCCGCACCTCGCGGAAACCGACATCGCAGGCTTCTGCTT
 <H R N V G R I L L P K G N L L L L L G N E I R V E R F G V D C A E A E
 < LACZ

5300
 CAATCAGCGTGCCGTCCGGGTGTCAGTTCAACCACCGCAGATAGAGATTTCGGGATTCGGCGCTCCACAGTTTCGGGTTTCGACGTTTCAGACGCTAG
 <I L T G D A T H L E V V A R Y L N P I E A S W L K P N E V N L R L
 < LACZ

FIG. 2(C1) CONT.

5400
 TGTGACGCGATCGGCATAACACACGCTCATCGATAATTTACCGCCGAAAGCGCGGTGCCGCTGGCGACCTGCGTTTCACCCCTGCCATAAAGAAACT
 <T V R D A Y G G R E D I I E G G F P A T G S A V Q T E G Q W L S V
 < LACZ

5500
 GTTACCCGTTAGTCACGCAACTCGCCGCACATCTGAACCTTCAGCCTCCAGTACAGCGCGGTGAAATCATCATTAAGCGAGTGGCAACATGGAAT
 <T V R L Y D R L E G C M Q V E A E L V A R S F D D N F R T A V H F D
 < LACZ

5600
 CGCTGATTTGTAGTCGGTTTATGCAGCAACGAGACGTCACGGAATAATGCCGCTCATCCGCCACATATCCTGATCTTCCAGATAACTGCCGTCACCTCCA
 <S I Q T T P K H L L S V D R F I G S M R W M D Q D E L Y S G D S W
 < LACZ

5700
 ACGCAGCACCATCACCGGAGGCGGTTTCTCCGGCGGTAAAAATGCGCTCAGGTCAAATTCAGACGGCAACGACTGTCTGGCCGTAACCGACCCAG
 <R L V M V A L R N E G A R L F A S L D F E S P L R S D Q G Y G V W
 < LACZ

5800
 CGCCCGTTGCACACAGATGAACGCCGAGTTAACGCCATCAAAAATAATTCGCGTCTGGCCTTCCTGTAGCCAGCTTTCATCAACATTAAATGTGAGCG
 <R G N C W L H F A S N V G D F I I R T Q G E Q L W S E D V N F T L S
 < LACZ

5900
 AGTAACAACCCGTCGGATTCTCCGTGGGAACAACGGCGGATTGACCGTAATGGGATAGGTTACGTTGGTGTAGATGGGCGCATCGTAACCGTGCACTCTG
 <Y C G T P N E T P V F P P N V T I P Y T V N T Y I P A D Y G H M Q
 < LACZ

FIG. 2(C1) CONT.

6000
CCAGTTTGAGGGGACGACGCGGATCCGGTTTTTTATTACAAAAGTGTACGAAAACAGTAAATACTATTATTTCGGACCAACAATGTTTATTCTTA
<V L L T * E *
< ORF1 N-TERM [S

<W N S P V V P D T K K N C F Q * S F L L I S I * E S W C --(SEQ ID NO:60) --

LACZ

6100
CCTCTAATAGTCTCTGTGGCAAGGTCAAGATTCTGTAGAACCCCAATGAAGAACCTGGTTGTTCAATAACATTTTGTTCGTCTAATAATTTCACCTACGCT
<R * Y D E T A L D L N Q * F G I F F R T T * Y C K T R R I N * * A

ORF1 N-TERM [SPLIT]

6200
TGACGTTGGCTGACACTTCATGTACCTCATCTATAAACGCTTCTTCTGTATCGCTCTGGACGCTCTTCACTTACGTGATCTGATATTTCACCTGTCAGAAATC
<Q R Q S V S * T G * R Y V S R R Y R E P R R * K R S R I N * Q * F G

ORF1 N-TERM [SPLIT]

6300
CTCACCAACAAGCTCGTCATCGCCCTTGCGAAGAGCAGAGAGGATATGCTCATCTCGTCTAAAGAACATCCCATTTTATTATATATTAGTCACGATATCTAT
<* W C A R * R A S S C L P Y A * R R F F M G X --(SEQ ID NO:61) --

ORF1 N-TERM [SPLIT]

6400
AACAGAATAATATATATAATAAGTTATCACGTAAGTAGAACATGAATAACAATATTAATTATCGTATGAGTTAAATCTTAAAAGTCACGTAAAAGAT
6500
AATCATGCGTCATTTTGACTCACGCGGTCGTTATAGTTCAAAATCAGTGACACTTACCGCATTGACAAGCACGCCCTCAGCCGAGCTCCAAGCGGCGACTG
6600
AGATGTCTCTAAATTGCCAAACAGCGGATTCCGGCTATTATTAGAAAGAGAGAGCAATATTTCAGAATGCATGCGTCAATTTTACGCAGACTATCTTTCT

RIGHT TERMINAL REPEAT >

FIG. 2(C1) CONT.

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6700
AGGGTTAATCTAGAGGATCCTCTAGATTAAACCCTAGAAAGATAATCATATTGTGACGTACGTTAAAGATAATCATGCGTAAAAATTGACGCATGTGTTTTT
>
_____
LEFT TERMINAL REPEAT
_____
>

6800
ATCGGCTGTATATCGAGGTTTATTTATTAAATTGAATAGATATTAAAGTTTTATTATATTACACTTACATACTAATAATAAAATTCACAAACAATTTAT

6900
TTATGTTTATTATTATTAATAAAACAAAACTCAAAATTTCTCTAAAGTAACAAACTTTTAAACATTCTCTCTTTTACAAAATAAACTTATTT

7000
TGTACTTTAAACACAGTCATGTTGTATTATAAAATAAGTAATTAGCTTAACTTATACATAATAGAAACAAATTATACTTATTAGTCAGTCCAGAAACAAC
<D T W F C S
< ORF1 C-TER _____

7100
TTTGGCACATATCAATATTATGCTCTCGACAAATAAATTTTGGCATTTTTCACCGATGCAATTTGCCCTTTTCGGCCTTATTTTAGAGGGGCAGTAAGTACA
<Q C M D I N H E R C I V K K C K K C S A N A K R R I K S P C Y T C
< ORF1 C-TERM _____

7200
GTAAGTACGTTTTTTCATTACTGGCTCTTCAGTACTGTCTCATCTGATGTACCAGGCACCTTCATTTGGCAAAATATTAGAGATATTATCGCGCAAAATATCTC
<Y T R K K M V P E E T S D D S T G P V E N P L I N S I N D R L Y R
< ORF1 C-TERM _____

7300
TTCAAAGTAGGAGCTTCTAAACGGTTACGCATAAACGATGACGTGAGGCTCATGTAAGGTTTCTCATAAATTTTTCGACCTTTGAACCTTTTCTCCCT
<K L T P A E L R N R M F S S T L S M Y L N R M F K K R S Q V K E G K
< ORF1 C-TERM _____

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FIG. 2(C1) CONT.

7400
 TGCTACTGACATTATGGCTGTATATAATAAAGAATTTATGCAGGCAATGTTTATCATTTCCGTACAATAATGCCATAGGCCACCTATTTCGTCTTCCCTACT
 <S S V N H S Y I I F S N I C A I N I M G Y L L A M P W R N T K R S
 < ORF1 C-TERM

7500
 GCAGGTCATCACAGAACACATTGGGCTCTAGCGGTGCCACTCCGCCCTTTAGTTTGATTATAATACATAACCATTTGCCGGTTTACCGGTACTTTTCGTTGATA
 <C T M V S C M Q D L T D V G G K T Q N Y Y M V M Q P K G T S E N I
 < ORF1 C-TERM

7600
 GAAGCATCCTCATCACAGATGATAATAAGTATACCATCTTAGCTGGCTTCGGTTTATATGAGACGAGAGTAAGGGGTCCGTCAAAACAAAACATCGATG
 <S A D E D C S S L L Y V M K A P K P K Y S V L T L P G D F C F M S T
 < ORF1 C-TERM

TTCCCACTGGCCCTGGAGCGACTGTTTTTCAGTACTTCCGGTATCTCCGGTTTGTTCGATCGCACGGTACC --- (SEQ ID NO:57) ---
 <G V P R S R S N K L V E P I E R K N S R V T G --- (SEQ ID NO:62) ---
 < ORF1 C-TERM

FIG. 2(C1) CONT.

pIAO-P/L-Lambda-2.2kb

Sequence Range: 1 to 9984

```
100 AACGGCGGGGAGAGCGGTTTGGCGTATTGGCGCTCTTCCGCTTCCTCGCTCACTGACTCGCTCGCTCGGTGTTGGCTGCGGCGAGCGGTATCAGC
200 TCACTCAAAGGCGGTAATACGGTTATCCACAGAAATCAGGGGATAACGCAGGAAGAACAATGTAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAG
   >ori
   |
   |
300 GCCGCGTTGCTGGCGTTTTTCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAA
400 GATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGGCTCTCCTGTTCCGACCCCTGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAAGCGT
500 GGCGCTTCTCAATGCTCACGCTGTAGGTAATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTACGCCCGACCGC
600 TCGCCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGT
700 ATGTAGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTT
800 CGGAAAAGAGTTGGTAGCTCTTGATCCGGCAACAACCAACCGCTGGTAGCGGTGGTTTTTTTGTTCGAAGCAGCAGATTACGCCGAGAAAAAAGGA
900 TCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAACGAAAACCTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCT
```

FIG. 2(C2)

1000 TCACCTAGATCCTTTTAAATTAATAATGAAGTTTAAATCAATCTAAAGTATATAGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGC
 <W H K I L S A
 < AMP RESIST

1100 ACCTATCTCAGCGATCTGTCTATTTCGTTTCATCCATAGTTGCCCTGACTCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCCAGT
 <G I E A I Q R N R E D M T A Q S G T T Y I V I R S P K G D P G L
 < AMP RESIST

1200 GCTGCAATGATACCGGAGACCCACGCTCACCGGCTCCAGATTATCAGCAATAAACCCAGCCGGAAGGCCGAGCGCAGAAAGTGGTCTCTGCAACTT
 <A A I I G R S G R E G A G S K D A I F W G A P L A S R L L P G A V K
 < AMP RESIST

1300 TATCCGGCTCCAGTCTATTAAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTGCCAGTTAATAGTTTGGCAACGTTGTTGCCATTGCTACAGGCAT
 <D A E M W D I L Q Q R S A L T L L E G T L L K R L T T A M A V P M
 < AMP RESIST

1400 CGTGGTGCACGCTCGTCTTGGTATGGCTTCATTACGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTT
 <T T D R E D N P I A E N L E P E W R D L R T V H D G M N H L F A T
 < AMP RESIST

1500 AGCTCCTTCGGTCCCGATCGTTGTCAGAAGTAAGTTGGCCGCGAGTGTTATCACTCATGTTATGGCAGCACTGCATAATTCTTACTGTCTATGCCAT
 <L E K P G G I T T L L L N A A T N D S M T I A A S C L E R V T M G D
 < AMP RESIST

1600 CCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGATGCGGCGACCGAGTTGCTCTTGCCCCGGCGTCAATACGGGA
 <T L H K E T V P S Y E V L D N Q S Y H I R R G L Q E Q G A D I R S
 < AMP RESIST

FIG. 2(C2) CONT.

1700
TAATACCGCGGCACATAGCAGAACTTTAAAGTGCTCATCATTTGGAACGTTCTTCGGGGCGAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGT
<L V A G C L L V K F T S M M P F R E E P R F S E L I K G S N L D L
< AMP RESIST

1800
TCGATGTAACCCACTCGTGCACCCCACTGATCTTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAA
<E I Y G V R A G L Q D E A D K V K V L T E P H A F V P L C F A A F F
< AMP RESIST

1900
AGGGAATAAGGCGCACACGGAATGTTGAATACTCACTCTTCCCTTTTCAATATTATGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACAT
<P I L A V R F H Q I S M --(SEQ ID NO:58)--
< AMP RESIST

2000
ATTGAATGTATTTAGAAAAATAAACAAATAGGGTTCCGGCGACATTTCCCCGAAAAGTGCCACCCTGACGCTCTAAGAAACCATTTATTATCATGACATTA

2100
ACCTATAAAAATAGCGGTATCACGGGGCCCTGAGGTGAACCAATTGTACACACGTAATATTACGACAACCTACCGTGACAGGCTTTGATAACTCCTTCACG
<R Y F Y A Y * P A R L H V L Q * V Y Y * S L * R A C A K I V G E R
< ORF1 N-TERM [SPLIT]

2200
TAGTATTCACCGAGTGGTACTCCGTTGGTCTGTGTTCCCTCTTCCAAATAAGGCATTCCTATTATCATATACTTCGTACCCTGTACACATCATGAGGA
<L I * R T T S R Q D T N R K G F L A N W K D Y V E Y W Q * V D H P
< ORF1 N-TERM [SPLIT]

2300
TTTTTATTCCATACTTACTTGGCTTGTGTTGGGATATACATCTCTAAACGGACACCGTCCCTCTTAAACCAAGTAACCTGTTTCATCTATGGTCAAATGAGCCCC
<N K N W V * K A Q K P Y V D * V S V T R * F W T V T * R H D F S G R
< ORF1 N-TERM [SPLIT]

FIG. 2(C2) CONT.

2400 TGGAGTGTAAATTTGTATGCACTGATGGATAAAGAGATCCCATATTTTCTAACAGGAGTAAATACATCGTTTCTCGAAGTGTGGGCCGTATACTTTTG
 <S H L K T H V S P Y L S G M N K * C S Y I C R K R S T H A T Y K Q
 < ORF1 N-TERM [SPLIT]
 2500 TCATCCATTCTAAGACATCGTATCAAAAAATCCAAAACGATCCACAGACTCATTCAGAGACGTACACATTGACAAAGATCGATCCAAAAGAGGTCAATCG
 <* G N * S M T D F F G F R D V S E N C L R V C Q C L D I W L P * R
 < ORF1 N-TERM [SPLIT]
 2600 TGGACATGTGGTTATCTTTTCTCACTGCTGTCTATTACCAGAATACCAAAGAAAGCATAGATTTCATCTCTTCATTCTGTCACGAAATGTAGCACCTGTGTCAT
 <H V H P * R K E S S D N G S Y W L F C L N * R * E H * S I Y C R D Y
 < ORF1 N-TERM [SPLIT]
 2700 AGATTCCCGACGTTTCAATGATATCTCAGCATTTGTCCATTTTACAATTTGCGAAATTATCTCATCAGTAAAAAATAGTTTGAAGCATAAAAAGTGGGTCA
 <I G S T E I I D * C K D M K C N A F N D * * Y F I T Q L M F T P *
 < ORF1 N-TERM [SPLIT]
 2800 TATATATTGCGGCACATACGCGTCGGACCTCTTTGAGATCTGACAATGTTTCAGTGCAGAGACTCGGCTACCGCTCGTGGACTTTGAAGTTAAATTCAGAT
 <I Y Q P V Y A D S R K S I Q C H E T C L S P * R E H V K F N --(SEQ ID NO:59) --
 < ORF1 N-TERM [SPLIT]
 2900 ATAAAGACGCTGAAAAATCATTTGATTTTCGCTCTAACATACCACCCTAAAGATTATAAATTTAATGAATTATTAAATACGTACAACAATTGTCTGTAAA
 3000 TCAACAACGCCACAGAATCTAGCGCTTAATAAATGTACTAATAACAATGTATCGTGTTTTAATACGCCGGACCAGTGAACAGAGGTGCGTCTGGTGCAAAC
 3100 TCCTTTACTTTGAACACCAGGGAAACTTCAAGGAGAAATTTCCCTCCTCTTTCAGCAGAGTCGGTACCGGTACCCCGGGGATCCCCCGGTATTATTATT

FIG. 2(C2) CONT.

3200
 ATTTTGTACACCACTGGTAATGGTAGCGACCGGCGCTCAGCTGGAATTCCGCCGATACTGACGGGCTCCAGGAGTCGTGCGCCACCAATCCCCAT
 <K Q C W V L Q Y H Y R G A S L Q F E A S V S P S W S D D G G I G M
 < LACZ

3300
 ATGGAACCGTCGATATTCAGCCCATGTGCCTTCTTCCGCGTGCAGCAGATGGCGATGGCTGGTTCCATCAGTTGCTGTTGACTGTAGCGGTGATGTTG
 <H F G D I N L W T G E E A H L L H R H S T E M L Q Q S Y R S I N
 < LACZ

3400
 AACTGGAAGTCGCCCGCCACTGGTGTGGCCATAATTCAATTCCGGCGTCCCAGCGCAGACC GTTTTCGCTCGGGAAGACGTACGGGGTATACATGT
 <F Q F D G R W Q H P G Y N L E R T G C R L G N E S P F V Y P T Y M D
 < LACZ

3500
 CTGACAATGGCAGATCCAGCGGTCAAACAGCGCGCAGTAAGCGGTGCGGATAGTTTCTTGGCGCCCTAATCCGAGCCAGTTTACCGCTCTGCTAC
 <S L P L D W R D F C A A T L R D P Y N E Q P G L G L W N V R E A V
 < LACZ

3600
 CTGCGCCAGCTGGCAGTTCAGGCCAATCCGCGCCGATGCGGTGATCGCTCGCCACTTCAACATCAACGGTAATCGCCATTTGACCACTACCATCAATC
 <Q A L Q C N L G I R A P H P T D S A V E V D V T I A M Q G S G D I
 < LACZ

3700
 CGTAGGTTTCCGGCTGATAAATAAGGTTTCCCCCTGATGCTGCCACCGGTGAGCGGTGCGTAATCAGCACCGCATCAGCAAGTGTATCTGCCGTGCACT
 <R Y T K R S I F L T K G Q H Q W A H A T T I L V A D A L T D A T C Q
 < LACZ

3800
 GCAACAACCGCTGCTCGGCCTGGTAATGGCCCGCCGCTTCCAGCGTTCGACCCAGCGGTAGGGTCAATCGGGTCGCTTCACTTACGCCAATGTCGTT
 <L L A A E A Q Y H G A A K W R E V W A N P D I R T A E S V G I D N
 < LACZ

FIG. 2(C2) CONT.

3900
 ATCCAGCGGTGCACGGGTGAACCTGATCGCGCAGCGCGGTCAAGCAGTTGTTTTTATCGCCAATCCACATCTGTGAAAGAAAGCCTGACTGGCGGTAAAT
 <D L P A R T F Q D R L P T L L Q K K D G I W M Q S L F G S Q R N F
 < LACZ

4000
 TGCCAACGCTTATTACCCAGCTCGATGCAAAAATCCATTTCGCTGGTGGTCAGATGCGGGATGGCGTGGGACGCGGGGAGCGTCACACTGAGGTTTT
 <Q W R K N G L E I C F D M E S T T L H P I A H S A A P L T V S L N E
 < LACZ

4100
 CCGCCAGACGCCACTGCTGCCAGCGCTGATGTGCCCCGCTTCTGACCATGCGGTGCGGTTGCGTTGCACTACGCGTACTGTGAGCCAGAGTTGCCCGGC
 <A L R W Q Q W A S I H G A E S W A T A N P Q V V R V T L W L Q G A
 < LACZ

4200
 GCTCTCCGGTGGGTAGTTCAGGCAGTTCAACTGTTTACCTTGTGGAGCGACATCCAGAGGCACCTTCCCGCTTCCAGCGGCTTACCATCCAGC
 <S E P Q P L E P L E I L Q K G Q P A V D L P V E G S A L P K G D L
 < LACZ

4300
 GCCACCATCCAGTGCAGGAGCTCGTTATCGCTATGACGGAACAGGTATTCGCTGGTCACCTTCGATGGTTTCCCGGATAAACGGAACTGGAAAAAAGTCT
 <A V M W H L L E N D S H R F L Y E S T V E I T Q G S L R F Q F F Q Q
 < LACZ

4400
 GCTGGTGTGTTGCTTCCGTACGCGCTGGATGCGCGGTGGGTGCGGAAGACCAAGACCGTTTCATACAGAACTGGCGATCGTTGCGGTATCGCCAAAATC
 <Q H K A E T L A P H P T R D A F V L G N M C F Q R D N P T D G F D
 < LACZ

4500
 ACCGCCGTAAGCCGACACGGGTGCGGTTTCATCATATTTAATCAGCGACTGATCCACCCAGTCCAGACGAAGCCGCCCTGTAAACGGGGATCTGA
 <G G Y A S W P N G N E D Y K I L S Q D V W D W V F G G Q L R P Y Q
 < LACZ

FIG. 2(C2) CONT.

4600 CGAAACGCCTGCCAGTATTTAGCGAAACCGCCAAAGACTGTTACCCATCGCGTGGCGGTATTCCGAAAGGATCAGCGGGCGCGTCTCTCCAGGTAGCGAAA
 <R F A Q W Y K A F G G L S N G M A H A Y E C L I L P R T E G P L S L
 < LACZ

4700 GCCATTTTGTGATGGACCATTTTCGGCACAGCCGGGAAGGCTGGTCTTTCATCCACGCGCGGTACATCGGGCAAATAATATCGGTGGCCGTGGTGTCCGGC
 <W K K I S W K P V A P F P Q D E D V R A Y M P C I I D T A T T D A
 < LACZ

4800 TCCGCCGCCTTCATACTGCACCGCGGGAAGGATTCGACAGATTGTATCCAGCGGTACAGCGCGTCTGATAGCGCCGTGGCCTGATTTCATTCCTCCAGC
 <G G E Y Q V P R S P D V S K I W R Y L A D H N A G H G S E N G L
 < LACZ

4900 GACCAGATGATCACACTCGGGTGATTACGATCGCGGTGCACCATTCGCGTTACGCGTTACGCGGTAGCCCGGTAGCCAGCGCGGATCATCGGTCAGACGAT
 <S W I I V S P H N R D R Q V M R T V R E S M A P L W R P D D T L R N
 < LACZ

5000 TCATTGGCACCATGCCGTGGGTTTCAATATTGGCTTCATCCACCACATACAGGCCGTAGCGGTGCGACAGCGGTGTACCACAGCGGATGGTTCGGATAATG
 <M P V M G H T E I N A E D V V Y L G Y R D C L T Y W L P H N P Y H
 < LACZ

5100 CGAACAGCGCACGGCGTTAAAGTTGTTCTGCTTCATCAGCAGGATATCCTGCACCATCTGCTGTCTCATCCATGACCTGACCATGCAGAGGATGATGCTCG
 <S C R V A N F N N Q K M L L I D Q V M T Q E D M V Q G H L P H H E
 < LACZ

5200 TGACGGTTAACCCCTCGAATCAGCAACGGCTTGCCGTTTCAGCAGCAGCAGACCATTTTCAATCCGCACCTCGCGGAAACCGACATCGCAGGCTTCTGCTT
 <H R N V G R I L L P K G N L L L L G N E I R V E R F G V D C A E A E
 < LACZ

FIG. 2(C2) CONT.

5300
CAATCAGCGTCCCGTGGCGGTGTCAGTTCAACCACCGCAGATAGAGATTCGGGATTTCCGCGCTCCACAGTTTCGGGTTTTCGACGTTTCAGACGTAG
<I L T G D A T H L E V A R Y L N P I E A S W L K P N E V N L R L
< LACZ

5400
TGTACCGGATCGGCATAACCACCGCTCATCGATAATTTCACCGCCGAAAGCGCGGTGCGGACCTGCGTTTCACCCCTGCCATAAAGAAACT
<T V R D A Y G G R E D I I E G G F P A T G S A V Q T E G Q W L S V
< LACZ

5500
GTTACCGGTAGTCACGCAACTCGCCGCACATCTGAACCTCAGCTCCAGTACAGCGCGGTGAAATCATCATTTAAAGCGAGTGGCAACATGGAAAT
<T V R L Y D R L E G C M Q V E A E L V A R S F D D N F R T A V H F D
< LACZ

5600
CGCTGATTTGTAGTCGGTTTATGCAGCAACGAGACGTCACGGAAATGCCGCTCATCCGCCACATATCCTGATCTTCCAGATAACTGCCGTCACCTCCA
<S I Q T T P K H L L S V D R F I G S M R W M D Q D E L Y S G D S W
< LACZ

5700
ACGACGACCATCACCGGAGGCGTTTCTCCGGCGGTAAATGCGCTCAGGTCAAATTCAGACGGCAAACGACTGTCCTGGCCGTAACCGACCCAG
<R L V M V A L R N E G A R L F A S L D F E S P L R S D Q G Y G V W
< LACZ

5800
CGCCCGTTGCACCACAGATGAAACCGCGAGTTAACGCCATCAAAAATAATTCGGCTCTGGCCTTCCTGTAGCCAGCTTTCATCAACATTAAATGTGAGCG
<R G N C W L H F A S N V G D F I I R T Q G E Q L W S E D V N F T L S
< LACZ

5900
AGTAACAACCCGTCGGATTCTCCGTGGGAACAACCGCGGATTGACCGTAATGGATAGGTTACGTTGGTGTAGATGGGCGCATCGTAACCGTGCATCTG
<Y C G T P N E T P V F P P N V T I P Y T V N T Y I P A D Y G H M Q
< LACZ

FIG. 2(C2) CONT.

6700

AGGTTAATCTAGCTTTCTAATTAACTTTGTTCAGGTTACCAACTACTAAGTTGTAGGCTCAAGAGGGTGTGTCCTGTCGTAGGTAATAACTGACC
<K R I * G K D P * W S S L N Y A * S P T D Q R L Y I V S R
<EA31 (296); CODON START=1; DB XREF=PID:G215131; TRA [SPLIT]
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]
>

6800

TGTCGAGCTTAATCTATATGTTGTTCTTCTGCAAAAAGTGGGAAGTGAGTAATGAAATTATTTCTAACATTATCTGCATCATACCTTCCGAG
<D L K I N * I T T R E A F F H P L S Y H F * K * C K D A D Y R G L
<EA31 (296); CODON START=1; DB XREF=PID:G215131; TRA [SPLIT]
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

6900

CATTTATTAAGCATTTTCGCTATAAGTTCTCGCTGGAAGAGGTAGTTTTTTCATTGTACTTTACCTTCATCTCTGTTTCATTATCATCGCTTTTAAACGGT
<M * * A N R * --(SEQ ID NO:64) --
<EA31 (296); CO
<S Y T R A P L P L K K M T S * R * R Q EN D D S K F R N
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

FIG. 2(C2) CONT.

7000

TCGACCTTCTAATCCTATCTGACCATTATAATTTTGTAGAAATGGTTTCATAAGAAAGCTCTGAATCAACGGACTGCGATAATAAGTGGTATCCAGAA
<S R R I R D S W * L K K S H N * L F A R F * R V A I I L P P I W F
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7100

TTTGTCACTTCAAGTAAAAACACCTCAGGAGTTAAACACCTAAGTTCTCACCGAATGTCTCAATATCCGGACGGATAATATTATTGCTTCTTGACC
<K D S * T F V G * S N F C R L E * R I D * Y G S P Y Y K N S R K V
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7200

GTAGGACTTTCACATGCAGGATTTTGGAACCTCTTGCAGTACTACTGGGGAATGAGTTGCAATTATTGCTACACCATTCGGTGCATCGAGTAAGTCGCT
<T P S E V H L I K S G R A T S S P F S N C N N S C W Q T C R T L R K
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

FIG. 2(C2) CONT.

7300

TAATGTTCTGTAATAAAGCAGAGCAAGGTGGATGCAGATGAACCTCTGGTTCATCGAATAAAACTAATGACTTTTCGCCAACGACATCTACTAATCTT
 <I N T F F C L A F T S A S S G R T * R I F S I V K R W R C R S I K
 <EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 <MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7400

GTGATAGTAAATAAACAATTGCAATGTCAGAGCTCATTCGAAGCAGATATTTCTGGATATTGTCAATAAACAAATTTAGTGAATTTATCATCGTCCACTT
 <H Y Y I F C N C T W L E N S A S I E P Y Q * L V I * H I * * R G S
 <EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 <MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7500

GAATCTGTGGTTCATTACGTCCTTAACCTTCATATTTAGAAAATGAGGCTGATGAGTCCATATTTGAAAAGTTTTCATCACACTACTAGTTTTTGATAGC
 <S D T T * * T K V R * I * F H P Q H T G Y K F L K * * * K T K Q Y S
 <EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
 <MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 <MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

FIG. 2(C2) CONT.

7600

TTCAAGCCAGAGTTGTCTTTTCTATCTACTCTCATACAACCAATAAATGCTGAAATGAATTTCTAAGCGGAGATCGCCTAGTGAITTTTAAACTATTGCTG
<* A L T T K K * R S E Y L W Y I S F H I R L P S R R T I K F * Q Q
< EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7700

GCAGCATTTCTGAGTCCAATATAAAAGTATTGTGTACCTTTTCTGGGTCAGGTTGTTCTTTAGGAGGAGTAAAGGATCAAATGCACTAAACGAAACTG
< C C E Q T W Y L L I T Y R K S P * T T R * S S Y F S * I C * V F S
< EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

7800

AAACAAGCGATCGAAATATCCCTTTGGGATTCTTGACTCGATAAGTCTATTATTTTCAGAGAAAAATATTCATTGTTTCTGGGTGGTGATTCACCC
< F C A I S F I G K P N K V R Y T * * K * L F F I * Q K R P Q H N C W
< EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
< MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
< MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

FIG. 2(C2) CONT.

7900

AATCATTCATTCAAAATTGTTGTTTACCACACCCCATTCGCCCGGATAAAGCATGAATGTTCTGCTGGCATAGAAATTAACCGTCACCTCAAAGGT
<D N W E F N N N * W V W E A R Y F C S H E H Q A Y F * G D G * F T
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8000

ATAGTTAAATCACTGAATCCGGGAGCACCTTTTCTATTAAATGAAAAGTGGAATCTGACAATTCTGGCAAACCATTTAACACACGTCGGAACCTGTCCAT
<Y N F * Q I R S C K K * * I F L P F R V I R A F W K V C T R V T W
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8100

GAATTTCTGAAAGAGTTACCCCTCTAAGTAATGAGGTGTTAAGGACGCTTTCATTTTCAATGTCGGCTAATCGATTGGCCATACTACTAAATCCTGAAT
<S N R F S N G R * T I L H * P R K * K * H R S I S K A M S S F G S Y
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

FIG. 2(C2) CONT.

8200

AGCTTTAAGAAGGTTATGTTTAAACCATCGCTTAATTGCTGAGATTAAACATAGTAGCAATGCTTTCACCTAAGGAAAAACATTTTCAGGAGTTGA
<S * S P * T * F W R K I Q Q S * C L L * H K * R L F F V N * P T S
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8300

CTGAAATTTTATCTATTAAATGAATAAGTGCTTACTTCTTCTTTTGACCTACAAAACCAATTTTAACATTTCCGATATCGCATTTTTCACCATGCTCAT
<Q I K * R N I F L H K S R R K S R C F W N * C K R Y R M K * W A *
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8400

CAAAGACAGTAAGATAAAACATTGTAAACAAAGGAATAGTCAATCCAACCATCTGCTCGTAGGAATGCCTTATTTTCTACTGCAGGAATATACCCGCC
<* L C Y S L V N Y C L F L * E L W R S T P I G * K K R S C S Y V --(SEQ ID NO:65)--
<EA59 (525); CODON START=1; DB XREF=PID:G215132; TRA
<MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

FIG. 2(C2) CONT.

8500

TCCTTCAATAAACAATACTCCAACATATAGTAACCCCTTAATTTTATTAAATAACCGCAATTTATTGGCGGCAACACAGGATCTCTCTTTAAGTTAC
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8600

TCCTATTACATACGTTTTCCATCTAAAAATTAGTAGTATTGAACTTAACGGGCGCATCGTATTGTAGTTTTCCATATTAGCTTTCTGCTTCCTTTTGA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8700

TAACCCACTGTTATTTCATGTTGCATGGTGCACTGTTTATACCAACGATATAGTCTATTAAATGCATATATAGTATCGCCGAACGATTAGCTCTTCAGGCCT
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

8800

CTGAAGAAGCGTTTCAAGTACTAAATAAGCCGATAGATAGCCACGGACTTCGTAGCCATTTTCATAAGTGTTAACTTCGGCTCCTCGCTCATAACAGACA
 < MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
 < MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]

FIG. 2(C2) CONT.

```

8900      TTCACACAGTTATGGCGGAAAGGTATGCATGCTGGGTGTGGGAAGTCGTGAAAGAAAGAAAGTCAGCTGCGTGTGACATCACTGCTATCTTCTTA
<      MRNA-PL (ALT.; VIA T'J4 TERMINATOR) [SPLIT]
<      MRNA-PL (ALT.; VIA T'J3 TERMINATOR) [SPLIT]
<      MRNA-PL (ALT.; VIA T'J2 TERMINATOR) [SPLIT]
<      MRNA-PL (ALT.; VIA T'J1 TERMINATOR) [SPLIT]
_____
9000      CTGGTTATGCAGTCGTAGTGGTGGCACACAAAGCTAGATTAAACCCTAGAAAGATAATCATATTTGTGACGTACGTTAAAGATAATCATGCGTAAATTC
<      MRNA-PL (ALT.; VIA T'J4 TERM
<      MRNA-PL (ALT.; VIA T'J3 TERM
<      MRNA-PL (ALT.; VIA T'J2 TERM
<      MRNA-PL (ALT.; VIA T'J1 TERM
_____
9100      ACGCATGTGTTTTTATCGGTCTGTATATCGAGGTTTTATTATTAATTTGAATAGATATTAAGTTTATTATATTACACTTACATACTAATAATAATTC
_____
>      LEFT TERMINAL REPEAT _____ >
9200      AACAAACAATTATTATGTTATTATTATTAATAAAAAACAAAACTCAAAATTTCTTAAAGTAACAAAACTTTTAAACATTTCTCTCTTTTACAA
9300      AAATAAACTTATTTGTACTTTAAAAACAGTCATGTTGTATTATATAAAATAAGTAATTAGCTTAACCTATACATAAATAGAAAACAATTACTATTAGTC
<D
<
9400      AGTCCAGAAACAACCTTTGGCACATATCAATATTATGCTCTCGACAAATAAAGTTTTCATTTTTTGCACGATGCATTTGCCCTTATTTTAGAG
<T W F C S Q C M D I N H E R C I V K K C K C S A N A K R R I K S
<      ORF1 C-TERM

```

FIG. 2(C2) CONT.

9500

GGGCAGTAAGTACAGTACGTTTTCATTACTGGCTCTTCAGTACTGTCACTGATGTACCAGGCACCTTCATTGGCAAAATATTAGAGATATTAT
<P C Y T C Y T R K K M V P E E T S D D S T G P V E N P L I N S I N D
< ORF1 C-TERM

9600

CGCGCAAAATATCTCTTCAAAGTAGGAGCTTCTAAACGGTTACGCATAAACGATGACGCTCAGGCTCATGTAAAGTTTCTCATATAATTTTTCGGACTTTG
<R L Y R K L T P A E L R N R M F S S T L S M Y L N R M F K K R S Q
< ORF1 C-TERM

9700

AACCTTTTCTCCCTTGCTACTGACATTATGGCTGTATATAATAAAGAAATTTATGCAGGCAATGTTTATCATCCGTACAATAATGCCATAGGCCACCTA
<V K E G K S S V N H S Y I I F S N I C A I N I M G Y L L A M P W R
< ORF1 C-TERM

9800

TTCGTCTTCCTACTGCAGGTCAACAGAACACATTGGTCTAGCGTGTCACCTCCGCCCTTAGTTGATTATAACATAACCATTTGCGGTTTACCGG
<N T K R S C T M V S C M Q D L T D V G G K T Q N Y Y M V M Q P K G T
< ORF1 C-TERM

9900

TACTTTCGTTGATAGAAGCATCCTCATCACAGAATGATAATAAGTATACCATCTTAGCTGGCTTCGGTTTATATGACGAGAGTAAGGGTCCGTCAA
<S E N I S A D E D C S S L L Y V M K A P K P K Y S V L T L P G D F
< ORF1 C-TERM

ACAAAACATCGATGTTCCCACTGGCCCTGGAGCGACTGTTTTTCAGTACTTCCGGTATCTCGCGTTTGTGATCGCACGGTACC --- (SEQ ID NO:63) ---
<C F M S T G V P R S R S N K L V E P I E R K N S R V T G --- (SEQ ID NO:66) ---
< ORF1 C-TERM

FIG. 2(C2) CONT.

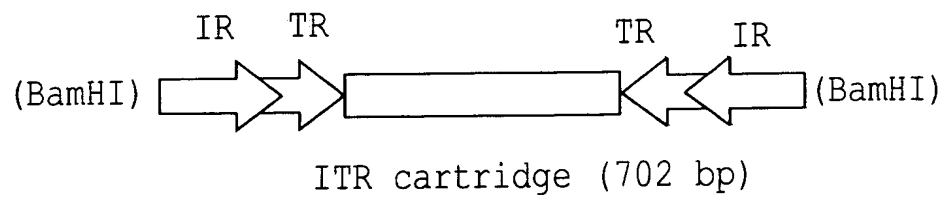


FIG. 3A

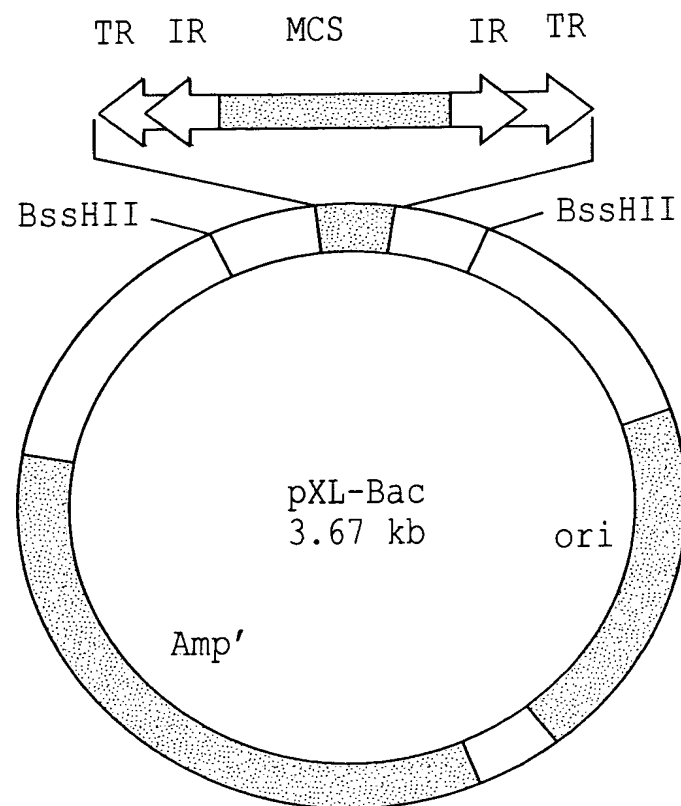


FIG. 3B

ITR Cartridge Sequence

Sequence Range: 1 to 707

```

                                                                50
GGATCCCATGCGTCAATTTTACGCAGACTATCTTTCTAGGGTTAATCTAG
      _____ RIGHT TERMINAL REPEAT _____ >
                                                                100
CTGCATCAGGATCATATCGTCGGGTCTTTTTTCCGGCTCAGTCATCGCCC
                                                                150
AAGCTGGCGCTATCTGGGCATCGGGGAGGAAGAAGCCCGTGCCTTTTCCC
                                                                200
GCGAGGTTGAAGCGGCATGGAAAGAGTTTGCCGAGGATGACTGCTGCTGC
                                                                250
ATTGACGTTGAGCGAAAACGCACGTTTACCATGATGATTCGGGAAGGTGT
                                                                300
GGCCATGCACGCCTTTAACGGTGAACGTTCGTTTCAGGCCACCTGGGATA
                                                                350
CCAGTTCGTCGCGGCTTTTCCGGACACAGTTCCGGATGGTCAGCCCGAAG
                                                                400
CGCATCAGCAACCCGAACAATACCGGCGACAGCCGGAACGTGCCGTGCCGG
                                                                450
TGTGCAGATTAATGACAGCGGTGCGGCGCTGGGATATTACGTCAGCGAGG
                                                                500
ACGGGTATCCTGGCTGGATGCCGCAGAAATGGACATGGATAACCCCGTGAG
                                                                550
TTACCCGGCGGGGCGCGCCTCGTTCATTCACGTTTTTTGAACCCGTGGAGGA
                                                                600
CGGGCAGACTCGCGGTGCAAATGTGTTTTACAGCGTGATGGAGCAGATGA
                                                                650
AGATGCTCGACACGCTGCAGAACACGCAGCTAGATTAACCCTAGAAAGAT
                                                                >
                                                                700
AATCATATTGTGACGTACGTAAAGATAATCATGCGTAAAATTGACGCAT
_____ LEFT TERMINAL REPEAT _____ >
_>
GGGATCC -- (SEQ ID NO:40) --
_>
```

FIG. 3(C1)

pXL-Bac

Sequence Range: 1 to 3662

```
100  CTAATTTGTAAGCGTTAATAATTTTGTAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCCAAAATCCCTTAT
200  AAATCAAAGAATAGACCGAGATAGGTTGAGTGTGTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTCGACTCCAACGTCAAAGGGCGGAAAAA
300  CCGTCTATCAGGGCGATGGCCCCACTACGTGAACCATCACCCTAATCAAGTTTGTGGGTCGAGTGCCGTAAAGCATAAATCGGAACCCCTAAAGGGAG
400  CCCCCGATTAGAGCTTGACGGGGAAGCCGGCGAACGTGGCGAGAAAGGAAGGAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG
500  GTCACGCTGGCGTAACCAACACACCCGGCGGCTTAATGGCCGCTACAGGGCGCGTCCCATTCCGCATTCAGGCTGCGCAACTGTTGGGAAGGGCGAT
600  CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTGCAAGCGGATTAAGTTGGGTAACGCCAGGGTTTCCCAGTCACGACGTTG
700  TAAACGACGGCCAGTGAGCGCGCCTCGTTTCATTACGTTTTTGAACCCGTGGAGGACGGGACAGACTCGCGGTGCAAAATGTGTTTACAGCGTGAATGGAG
800  CAGATGAAGATGCTCGACACGCTGCAGAACACGACGCTAGATTAAACCCTAGAAAGATAATCATATTGTGACGTACGTTAAAGATAATCATGCGTAAATTT
    >MCS of pBSII
    |
    |
900  GACCGATGGGATCTGTAATACGACTCACTATAGGGCGAATTGGGTACCGGGCCCCCCCCTCGAGGTCGACGGTATCGATAAGCTTGATATCGAATTCCTGCG
    >
```

FIG. 3(C2)

2100 ACCAGGCGTTCCCCCTGGAAGCTCCCTCGTGGCTCTCCTGTCCGACCCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGC
2200 GCTTTCATAGCTCACGCTGTAGGTATCTCAGTTCGGGTAGGTGCTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTTCAGCCCCGACCGCTGC
2300 GCCTTATCCGGTAACATACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATG
2400 TAGCGGGTGCTACAGAGTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGACAGTATTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGG
2500 AAAAAAGAGTTGGTAGCTCTTGATCCGGGCAACAAACCCCGCTGGTAGCGGTGGTTTTTTTGTGTGCAAGCAGCAGATTACGGCGCAGAAAAAAGGATCT
2600 CAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTCAGTGGAAACGAAACTCAGTTAAGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCA
<ColEI_origin
|
|
2700 CCTAGATCCTTTAAATTAAAAATGAAGTTTAAATCAATCTAAAGTATATATAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACC
< AMPCILLIN RESISTAN
2800 TATCTCAGCGATCTGTCTATTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCCAGTGCT
< AMPCILLIN RESISTANCE
2900 GCAATGATACCGGAGACCCACGCTCACCGGCTCCAGATTTCAGCAATAAACACGACCCGGAAGGCCGAGCGCAGAAGTGGTCTTGCAACTTTAT
< AMPCILLIN RESISTANCE

FIG. 3(C2) CONT.

3000
 CCGCCTCCATCCAGTCTATTAAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGGCAACGTTGTTGCCATTGCTACAGGCATCGT
 < _____
 AMPICILLIN RESISTANCE

 3100
 GGTGTCACGGCTCGTCGTTTGGTATGGCTTCATTACAGTCCGGTTCCTCAACGATCAAGCGGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGC
 < _____
 AMPICILLIN RESISTANCE

 3200
 TCCTTCGGTCCCTCCGATCGTTGTCAGAAAGTAAGTTGGCCGCAGTGTATCACTCATGGTTATGGCAGCACTGCATAATTCTTACTGTCTATGCCCATCCG
 < _____
 AMPICILLIN RESISTANCE

 3300
 TAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATCGGGCGCAGTGCTCTTGTCCCGCGCTCAATACGGGATAA
 < _____
 AMPICILLIN RESISTANCE

 3400
 TACCGCGCCACATAGCAGAACTTTAAAGTGCTCATCATTTGAAAAAGTTCTTCGGGGCGAAAACTCTAAGGATCTTACCGCTGTTGAGATCCAGTTCG
 < _____
 AMPICILLIN RESISTANCE

 3500
 ATGTAACCCACTCGTGCACCCCAACTGATCTTCAGCATCTTTACTTTCAACGCGTTTCTGGGTGAGCAAAAACAGGAAGCAAAATGCCCGCAAAAAGG
 < _____
 AMPICILLIN RESISTANCE

 3600
 GAATAAGGGCGACACGGAAATGTTGAATACTCATCTCTCCCTTTTCAATATTATTGAAGCATTATCAGGGTTATTGTCTCATGAGCGGATACATATT
 < _____
 AMPICILLIN RESISTANCE

 TGAATGTATTAGAAAAATAAACAAATAGGGTTCCGGCGCACATTTCCCCGAAAAAGTGCCAC -- (SEQ ID NO:41) --

FIG. 3(C2) CONT.

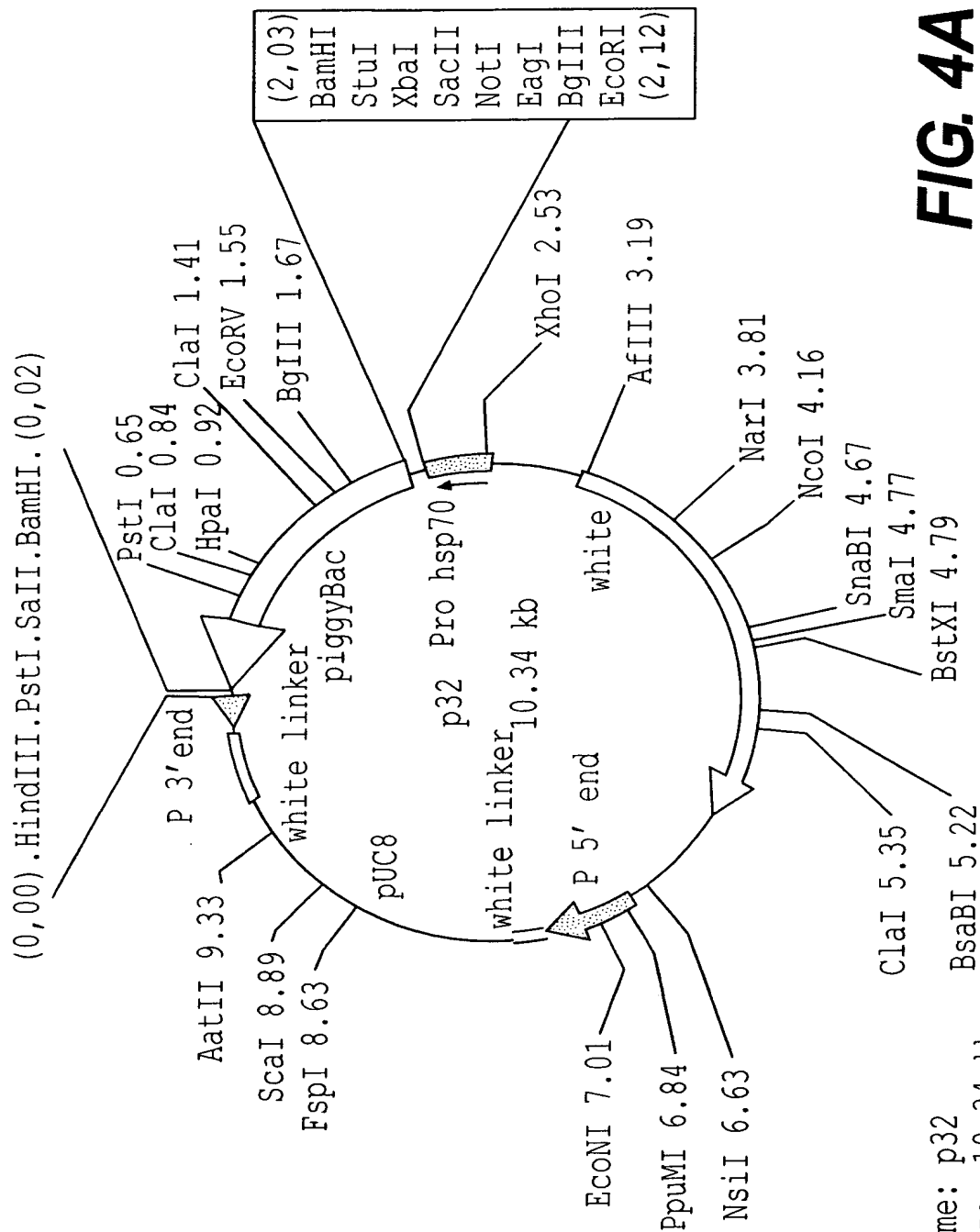


FIG. 4A

Plasmid name: p32

Plasmid size: 10.34 kb

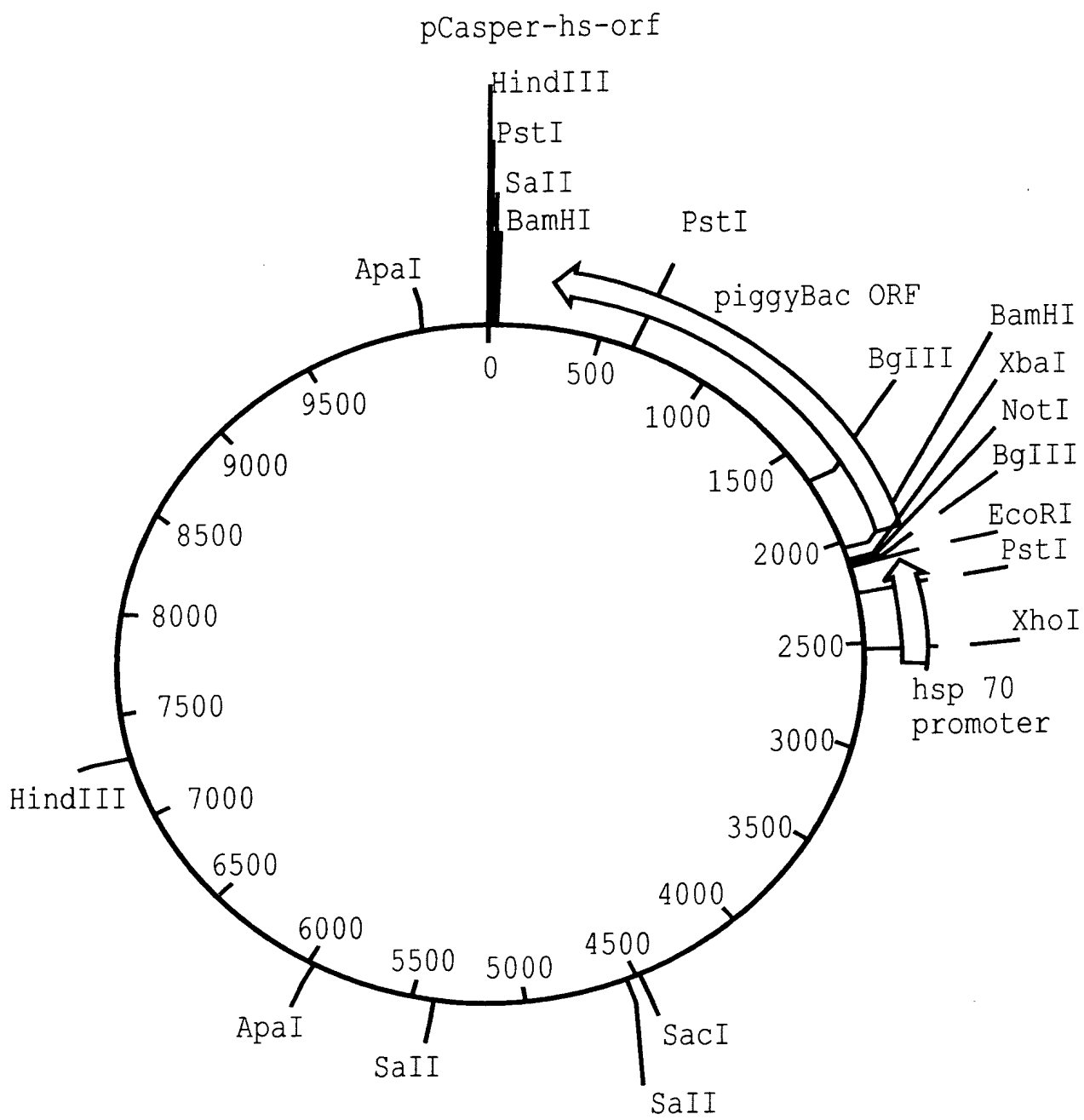


FIG. 5A

pBSII-hs-orf
Sequence Range: 1 to 5533

```
100 CTAAATTGTAAGCGTTAATAATTTTGTTAAAAATTCGCGTTAAATTTTGTGTTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCCAAAAATCCCTTAT
200 AAATCAAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCCAGTTTGGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGGAAAAA
300 CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCCTAATCAAGTTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAG
400 CCCCCGATTTAGAGCTTGACGGGGAAAGCCCGGAACGTGGCGAGAAAGGAAGGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGG
500 GTCACGCTGCGCGTAACCAACACACCCCGCGCGCTTAATGCGCCGCTACAGGGCGGTCCCATTCGCCATTTCAGGCTGCGCAACTGTTGGGAAGGGCGGAT
600 CGGTGCGGGCCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTGCAAGGCGATTAAAGTTGGGTAACGCCAGGGTTTTCCCAGTCACGACGTTG
700 TAAACGACGGCCAGTGCGGCGTAATACGACTCACTATAGGGCGAATTGGGTACCGGGCCCCCTCGAGGTCGACGGTATCGATAAGCTATCCAGT
800 GCAGTAAAAAATAAAAAAAATATGTTTTTTAAATCTACATTCTCCAAAAAAGGGTTTTATTAACTTACATACATACTAGAAATTGATCCCCCGATCCCC
900 CTAGAAATCCCAAAACAACTGGTTATTGTGGTAGGTCATTTGTTTGGCAGAAGAAACTCGAGAAATTTCTCTGCGCGTTATTTCGTATTCTCTCTTTTC
1000 TTTTGTGGTCTCCCTCTCTGCCTAATGCTCTCTCACTCTGTCAACAGTAAACGGCATACTGCTCTCGTTGGTTCGAGAGCGCGCCTCGAATGTTTCG
1100 CGAAAAGAGCGCGGAGTATAAATAGACGGCTTCGTCTACGGAGCGACAATTCAATTCAAAACAAGCAAAGTGAACACGTCGCTAAGCGAAAGCTAAGCAA
```

FIG. 5(B)

1200
ATAAACAGCGCAGCTGAACAAGCTAAACAATCTGCAGTAAAGTGCAAGTTAAAGTGAATCAATTAAAAGTAACCAGCAACCAAGTAAATCAACTGCAAC
<hsp70_promoter
|
|
1300
TACTGAAATCTGCCAAGAAGTAATTATTGAATACAAGAAGAGAACTCTGAATAGGGAATTGGGAATTTCCTGCAGCCCGGGGATCCTATATAATAAAATG
1400
GGTAGTTCTTTAGACGATGAGCATAATCCTCTCTGCTCTTCTGCAAGCGATGACGAGCTTGTGGTGAGGATTCTGACAGTGAAATATCAGATCACGTAA
1500
GTGAAGATGACGTCAGAGCGGATACAGAAGAAGCGTTTATAGATGAGGTACATGAAGTGCAGGCCAACGTCGAAGCGGTAGTGAAATATTAGACGGAACAAA
1600
TGTTATTGAACAACAGGTTCTTCATTGGCTTCTAACAGAAATCTTGACCTTGCCACAGAGGACTATTAGAGGTAAGAATAAACATTGTTGGTCAACTTCA
1700
AAGTCCACGAGCGGTAGCCGAGTCTCTGCACTGAACATTGTCAGATCTCAAAGAGGTCGACGCGTATGTCCGCAATATATATGACCCCACTTTTATGCT
1800
TCAAACTATTTTACTGATGAGATAATTTTCGGAAATTGTAAAATGGACAAATGCTGAGATATCATTTGAAACGTCGGGAATCTATGACAGGTGCTACATT
1900
TCGTGACACGAATGAAGATGAAATCTATGCTTCTTTGGTATTCTGGTAATGACAGCAGTGAGAAAAGATAACCACATGTCCACAGATGACCTCTTTGAT
2000
CGATCTTTGTCAATGGTGACGTCCTGTAAATGAGTCGTGATCGTTTGTATTTTGTATACGATGTCTTAGAATGGATGACAAAAGTATACGGCCCCACAC
2100
TTCGAGAAAACGATGTATTTACTCCTGTTAGAAAAAATATGGGATCTCTTTATCCATCAGTGCATACAAAATTACACTCCAGGGCTCATTTGACCATAGA
2200
TGAACAGTTACTTGGTTTTAGAGGACGGGTGCCGTTTAGGATGTATATCCCAACAAGCCAAAGTAAGTATGGAATAAAATCCTCATGATGTGTGACAGT

FIG. 5(B) CONT.

2300 GGTACGAAGTATATGATAAAATGGAATGCCTTATTTGGGAAGAGGAACACAGACCAACGGAGTACCACTCGGTGAATACTACGTGAAGGAGTTATCAAAGC
2400 CTGTGCACCGTAGTTGTCGTAATATTACGTGTGACAAATTGGTTACCTCAATCCCTTTGGCAAAAACTTACTACAAGAACCGTATAAGTTAACCATTTGT
2500 GGAACCGTGCGGATCAAACAACACGCGAGATACCGGAAGTACTGAAAAACAGTCGCTCCAGGCCAGTGGGAACATCGATGTTTTGTTTGACGGACCCCTT
2600 ACTCTCGTCTCATATAAACCGAAGCCAGCTAAGATGGTATACTATTATCATCTTGTGATGAGGATGCTTCTATCAACGAAAGTACCGGTAAACCGCAAA
2700 TGGTTATGTATTATAATCAAACCTAAAGCGGAGTGGACACGCTAGACCAAATGTGTTCTGTGATGACCTGCAGTAGGAAGACGAATAGGTGGCCTATGGC
2800 ATTAATTGTACGGAATGATAAACATTGCCCTGCATAAAATTCCTTTATTATATACAGCCATAATGTCAGTAGCAAGGGAGAAAGGTTCAAAGTCGCAAAAAA
2900 TTTATGAGAAACCTTTACATGAGCCTGACGTCATCGTTTATGCGTAAGCGTTTAGAAGCTCCTACTTTGAAGAGATATTTGCGCGATAATATCTCTAATA
3000 TTTTGCCAAATGAAGTGCCCTGGTACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAAACGTACTTACTGTACTTACTGCCCCCTCTAAAAATAAGGCG
3100 AAAGGCAAATGCATCGTGCAAAAAATGCAAAAAAGTTATTGTGCGAGAGCATAATATTGATATGTGCCAAAGTTGTTTCTGACTGACTAATAAGTATAAT
3200 TTGTTTCTATTATGTATAAGTTAAGCTAATTACTTATTTTATAATAACAACATGACTGTTTTTAAAGTACAAAAATAAGTTTATTTTGTAAAAAGAGAGAAT
3300 GTTTAAAGTTTTGTACTTTAGAGAAATTTTGAGTTTTTTTTTTTAAATAAAATAAAACATAAAATAAATTGTTTGTGAATTTGGATCCCACTA
3400 GTTCTAGAGCGCGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCTTTTAGTGAGGGTTAATTGCGCGCTTGGCGTAATCATGGTCATAGCTGTTTCCIG

FIG. 5(B) CONT.

3500 TGTGAAATTGTTATCCGCTCACAAATTCACACAAACATACGAGCCGGAAGCATAAAGTGTAAGCCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAAT
3600 TGCGTTGGGCTCACTGCCCGCTTTCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAAATGAATCGGCCAACGCCGGGAGAGCGGTTTGCGTATTGGG
3700 CGCTCTTCCGCTTCCCTCGCTCACTGACTCGCTCGGCTCGGCTCGGCTCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAG
3800 AATCAGGGGATAACGCAGGAAGAACAATGTGAGCAAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGCCCGGTTGCTGGCGTTTTCATAGGCTCCG
3900 CCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAGATACCAGGCGTTCCCCCTGGAAGCTCCCTC
4000 GTGGGCTCTCCTGTTCCGACCCCTGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTATC
4100 TCAGTTCGGGTAGGTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCGCTTCAGCCCGACCGCTGCCCTTATCCGGTAACATACTCGTCTTGAGTC
4200 CAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTTCTTGAAGTGG
4300 TGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTCGGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCA
4400 AACAAACCAACCGCTGGTAGCGGTGGTTTTTTTTTGTTCGAAGCAGCAGATTACGGCGAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTTCTACGGG
4500 GTCTGACGCTCAGTGGAAACGAAACTCACGTTAAGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGT

FIG. 5(B) CONT.

<ColE1_origin

|
|

4600 TTTAAATCAATCTAAAGTATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCTGTTTCAT
AMPCILLIN RESISTANCE >
4700 CCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGGAGACCCACGCTCACC
AMPCILLIN RESISTANCE >
4800 GGCTCCAGATTATCAGCAATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCTCTGCAACTTTATCCGGCCTCCATCCAGTCTATTAAATTGTTGC
AMPCILLIN RESISTANCE >
4900 CGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCACGCTCGTCGTTGGTATGGCTT
AMPCILLIN RESISTANCE >
5000 CATTGAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTAGCTCCTTCGGTCCCTCCGATCGTTGTCAGAAG
AMPCILLIN RESISTANCE >
5100 TAAGTTGGCCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTAC
AMPCILLIN RESISTANCE >
5200 TCAACCAAGTCATTCTGAGAAATAGTGTATGCGGCGACCGAGTTGCTCTTGGCCCCGGCTCAATACGGGATAATAACCGGCCACATAGCAGAACTTTAAAAG
AMPCILLIN RESISTANCE >
5300 TGCTCATATTGGAAAACGTTCTTCGGGGCGGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAAACCCACTCGTGCACCCCACTGATC
AMPCILLIN RESISTANCE >

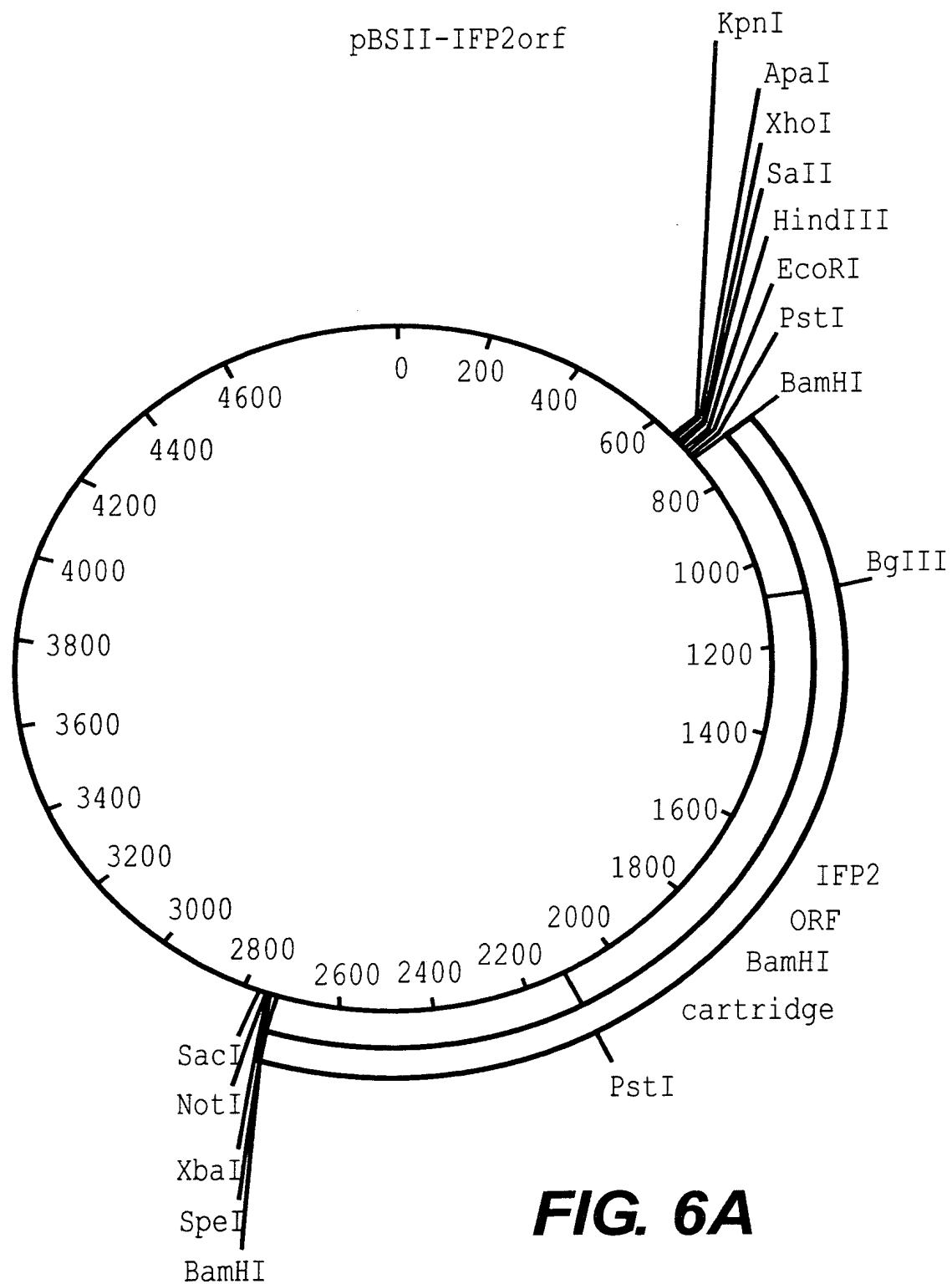
FIG. 5(B) CONT.

5400
TTCAGCATCTTTTACTTTCACCGGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATA

AMPCILLIN RESISTANCE
>
5500
CTCATACTCTTCCTTTTCAATATTATTGAAGCATTATATCAGGGTTATTGTCTCATGAGCGGATACATATTGAAATGTTAGAAAAATAAACAAATAG

>
GGGTCCGGCGCACATTTCCTCCGAAAGTGCCAC -- (SEQ ID NO:42) --

FIG. 5(B) CONT.



Sequence Range: 1 to 4971

100 CTAAATTGTAAGCGTTAATATTTTGTAAAAATTCGCGTTAAATTTTGTGTTAAATCAGCTCAATTTTAAACCAATAGGCCGAAATCGGCCAAAAATCCCTTAT
200 AAATCAAAGAATAGACCGAGATAGGGTTGAGTGTGTTGTTCCAGTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGGAAAAA
300 CCGTCTATCAGGGCGATGGCCCCACTACGTGAACCATCACCCCTAATCAAGTTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAG
400 CCCCCGATTTAGAGCTTGACGGGGAAGCCGGCGAACGTGGCGAGAAAGGAAGGAAGCAAGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG
500 GTACGCTGCGCGTAACCAACACACCCGCCGCGCTTAATGCGCCGCTACAGGGCGCGTCCCATTCGCCATTACGGCTCGGCAACTGTTGGGAAGGGCGAT
600 CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTGCAAGCGGATTAAAGTTGGGTAACGCCAGGGTTTTCCTCCAGTCACGACGTTG
700 TAAACGACGGCCAGTGAGCGCGCGTAATACGACTCACTATAGGGCGAATTGGGTACCGGGCCCCCCTCGAGGTCGACGGTATCGATAAGCTTGATATC
800 GAATTCCCTGCAGCCCCGGGGATCCTATATAATAAAATGGGTAGTTCTTTAGACCATGAGCATATCCTCTCTGCTCTCTGCAAAGCGATGACGAGCTTGT
900 TGGTGAGGATTCTGACAGTGAATATCAGATCACGTAAGTGAAGATGACGTCACAGAGCGGATACAGAAGACCGTTTATAGATGAGGTACATGAAGTGCAG
1000 CCAACGTCAGCGGTAGTGAATATTAGACGAACAAAATGTTATTGAACAACCAAGGTTCTTCATTGGCTTCTAACAGAACTCTTGACCTTGCCACAGAGGA
1100 CTATTAGAGGTAAGAATAAACATTGTTGGTCAACTTCAAAGTCCACGAGGCGTAGCCGAGTCTCTGCACCTGAACATTGTCAGATCTCAAAGAGGTCCGAC

FIG. 6(B)

1200 GCGTATGTGCCGCAATATATGACCCACTTTTATGCTTCAAACATATTTTACTGATGAGATAAATTCGGAAATGTAAAATGGACAAATGCTGAGATA
1300 TCATTGAAACGTCGGGAATCTATGACAGGTGCTACATTTTCGTGACACGGAATGAAGATGAAATCTATGCTTCTTTGGTATTCTCTGGTAATGACAGCAGTGA
1400 GAAAAGATAACCACATGTCCACAGATGACCTCTTTTGATCGATCTTTGTCAATGGTGTACGCTCTCTGTAATGAGTCGTCGTCGTTTGTGATGTTTGTGATACG
1500 ATGCTTAGAATGGATGACAAAAGTATACGGCCACACTTCGAGAAAACGATGTATTTACTCCTGTTAGAAAAATATGGGATCTCTTTATCCATCAGTGC
1600 ATACAAAATTACACTCCAGGGGCTCATTTGACCATAGATGAACAGTTACTTGGTTTTAGAGGACGGGTGCCGTTTAGGATGTATATCCCAACAAAGCCAA
1700 GTAAGTATGGAATAAAAATCCTCATGTGTGACAGTGGTACGAAGTATATGATAAATGGAATGCCTTATTTGGGAAGAGGAACACAGACCAACGGGAGT
1800 ACCACTCGGTGAATACTACGTGAAGGAGTTATCAAAGCCTGTGCACGGTAGTTGTTCGTAATATTACGTGTGACAAATTGGTTCACCTCAATCCCTTTGGCA
1900 AAAAACTTACTACAAGAACCGTATAAGTTAACCATTTGTGGGAACCGTGGCATCAAACAACGGCGAGTACCCGGAAGTACTGAAAAACAGTCGCTCCAGGC
2000 CAGTGGGAACATCGATGTTTGTTTTGACGGACCCCTTACTCTCGTCTCATATAAACCGAAGCCAGCTAAGATGGTATACTTATTATCATCTTGTGATGA
2100 GGATGCTTCTATCAACGAAAGTACCGGTAACCGCAAATGGTTATGTATTATAATCAAACATAAAGGCGGAGTGGACACGCTAGACCAAAATGTGTCTGTG
2200 ATGACCTGCAGTAGGAAGACGAATAGGTGGCCCTATGGCATTATTGTACGGAATGATAAACATATGSCCTGCATAAAATCTTTTATTATATACAGCCATAATG
2300 TCAGTAGCAAGGGAGAAAAGGTTCAAAGTCGCAAAAATTTATGAGAAAACCTTTACATGAGCCTGACGTCATCGTTTATCGCTAAGCGTTTAGAAGCTCC

FIG. 6(B) CONT.

2400 TACTTTGAAGAGATAATTGCGCGGATAATATCTCTAATATTTTGCCAAATGAAGTGCCCTGGTACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAA
2500 CGTACTTACTGTACTTACTGCCCCCTCTAAATAAAGGCGAAAGCCAAATGCATCGTGCAAAAAATGCAAAAAAGTTATTGTCTGAGAGCATAATATTGATA
2600 TGTGCCAAAGTTGTTCTGACTGACTAATAAGTATAAATTTGTTCTATTATGTATAAGTTAAGCTAATTACTTATTTTATAATACAACATGACTGTTTTT
2700 AAAGTACAAAAATAAGTTTATTTTGTAAAGAGAGAAATGTTTAAAGTTTTGTACTTTAGAAAGAAATTTTGAGTTTTTGTTTTTTTTAAATAATAAAT
2800 AAACATAAAATAAATTGTTGTTGAATTTGGATCCACTAGTTCTAGAGCGGGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAAT
2900 TCGCGCGTTGGCGTAATCATGGTCATAGCTGTTTCCCTGTGTGAAATTGTTATCCGCTCACAAATCCACACAAATACGAGCCGGAAGCATAAAGTGTA
3000 GCCTGGGGTGCCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTCCAGTCGGGAACCTGTCGTGCCAGCTGCATTAATGAA
>Cole1_origin
3100 TCGGCCAACGCGCGGGAGAGCGGTTTGCGGTATTGGGCGCTCTTCCGCTTCCTCGCTCACTGACTCGCTGCGCTCGGTCGTTCGGCTGCGGCGAGCGGT
3200 ATCAGCTCACTCAAAGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAGAAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGT
3300 AAAAAGCGCGGTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGAC
3400 TATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGGCTCTCCTGTTCGACCCCTGCCGCTTACCGGATACCTGTCCGCCTTCTCCCTTCGGG

FIG. 6(B) CONT.

3500 AAGCGTGGCGCTTCTCATAGCTACGCTGTAGGTATCTCAGTTCGGGTAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTTCAGCCCC
 3600 GACCGCTGGCCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAG
 3700 CGAGGTATAGGCGGTGCTACAGAGTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGT
 3800 TACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTCGAAGCAGCAGATTACGCCGAGAAAA
 3900 AAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGGCTCAGTGGAAACGAAAACTCACGTTAAGGGATTTTGGTCAAGAGATTATCAAAAA
 4000 GGATCTCACCTAGATCCTTTTAAATTAATAAGTAAATCAATCTAAAGTATATATAGTAAGTAACTTGGTCTGACAGTTACCAATGCTTAATCAG
 >
 4100 TGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAAACTACGATACGGAGGGCTTACCATCTGGC
 AMPCILLIN RESISTANCE
 4200 CCCAGTGTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTATCAGCAATAAACCCAGCCGCGAAGGGCCGAGCGCAGAAAGTGGTCCTG
 AMPCILLIN RESISTANCE
 4300 CAACTTTATCCGCCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGGCGCAACGTTGTTGCCATTGCTAC
 AMPCILLIN RESISTANCE
 4400 AGGCATCGTGGTGCACGCTCGTTCGTTTGGTATGGCTTCATTACAGCTCCGGTTCCTCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAA
 AMPCILLIN RESISTANCE
 >

FIG. 6(B) CONT.

4500
 GCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCA

 AMPICILLIN RESISTANCE >

 4600
 TGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAAATAGTGATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAAT

 AMPICILLIN RESISTANCE >

 4700
 ACGGGATAATACCGCGCCACATAGCAGAACTTTAAAGTGCTCATCATTTGGAAAACGTTCTTCGGGGCGAAAACTCTCAAGGATCTTACCGCTGTTGAGA

 AMPICILLIN RESISTANCE >

 4800
 TCCAGTTCGATGTAACCCACTCGTGACCCCACTGATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCG

 AMPICILLIN RESISTANCE >

 4900
 CAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCTTCAATATTATTGAAGCAATTATCAGGGTTATTGTCTCATGAGCGG

 AMPICILLIN RESISTANCE >

 ATACATATTGAAATGATTAGAAAAATAACAAATAGGGTTCGCGGCACATTCCCCGAAAAGTCCAC -- (SEQ ID NO:43) --

FIG. 6(B) CONT.

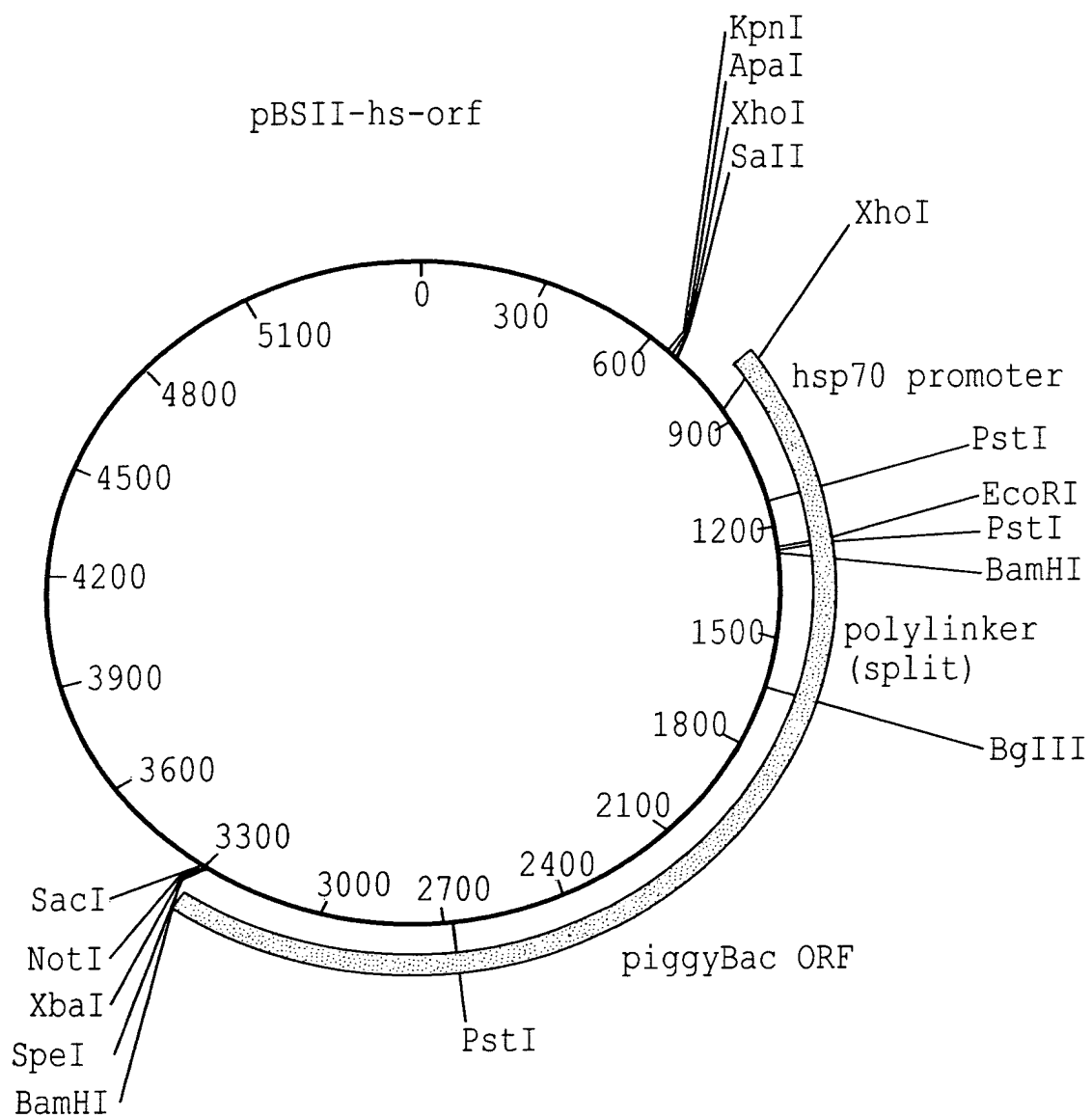


FIG. 7

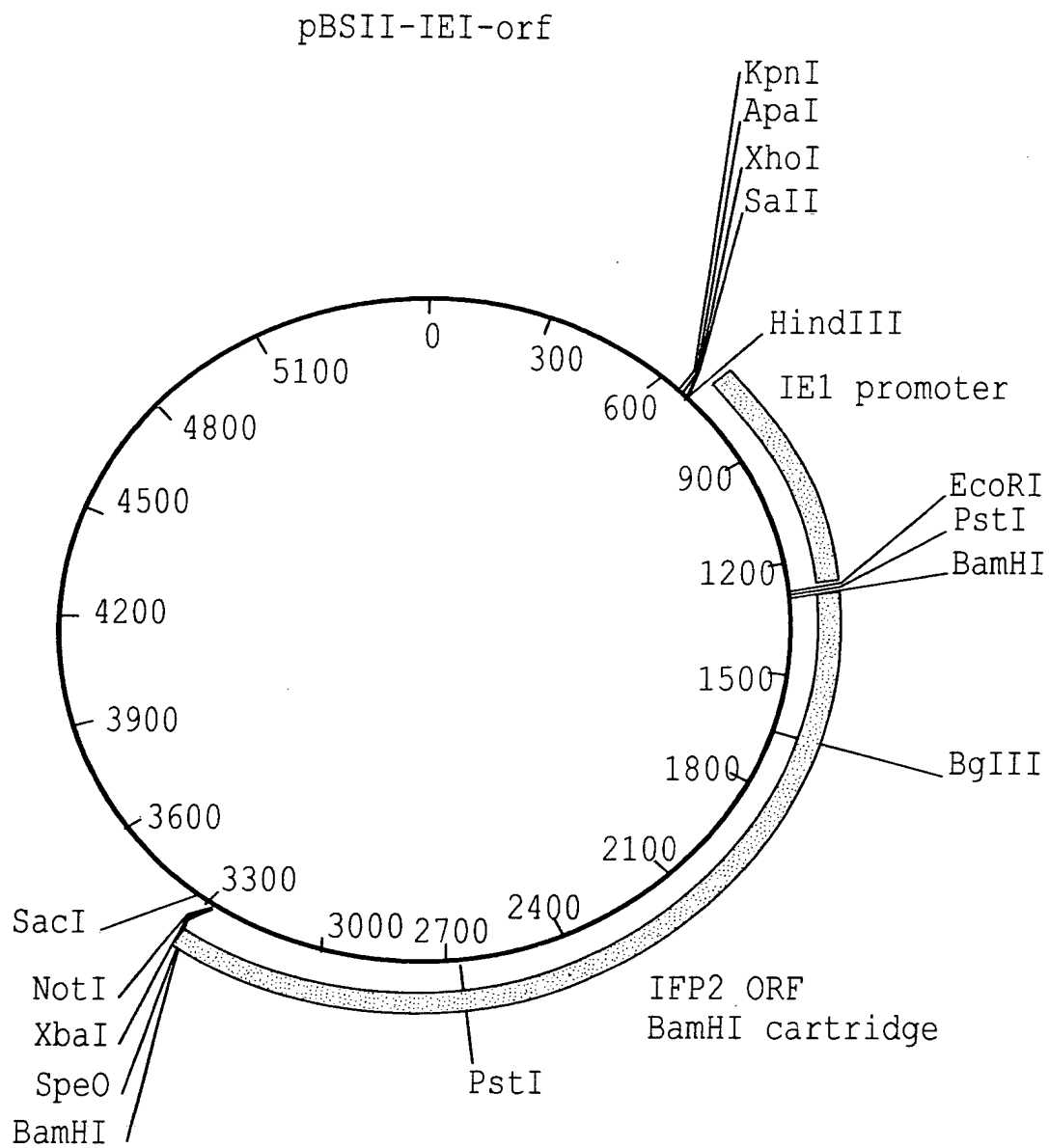


FIG. 8A

Sequence Range: 1 to 5523

```
100 CTAAATTGTAAGCGTTAATAATTTTGTAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCAAAATCCCTTAT
200 AAATCAAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCCAGTTTGGACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGGAAAAA
300 CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCTAATCAAGTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAG
400 CCCCCGATTTAGAGCTTGACGGGGAAGCCGGCGAACGTGGCGAGAAAGGAAGGAAAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG
500 GTCAGCTGCGCGTAACCAACACACCCGCCGCGCTTAATGCGCGCGCTACAGGGCGCGTCCCATTTCGCCATTTCAGGCTGCGCAACTGTTGGGAAGGGCGAT
600 CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTGCAAGCGGATTAAGTTGGTTAACGCCAGGGTTTTCCCAGTCACGACGTTG
700 TAAACGACGGCCAGTGAGCGCGCGTAATACGACTCACTATAGGGCGAATTGGGTACCGGGCCCCCCTCGAGGTCGACGGTATCGATAAGCTTCGATGT
800 CTTTGTGATGCGCGCGACATTTTGTAGGTTATTGATAAAATGAACGGATACAGTTGCCCGACATTATCATTAATCCTTGGCGTAGAATTTGTGGGTCC
900 ATTGTCCGTGTGCGCTAGCATGCCCGCTAACGGACCTCGTACTTTTGGCTTCAAAGGTTTTCGCCACAGACAAATGTGCCACACTTGCAGCTCTGCAATG
1000 TGTGCGCGTTACCACAAATCCCAACGGCGCAGTGTAATTGTTGTATGCAATAAATCTCGATAAAGCGCGCGCGGAATGCAGCTGATCAGGTACGCT
1100 CCTCGTGTCCGTTCAAGGACGGTGTATCGACCTCAGATTAAATGTTTATCGGGCCGACTGTTTTCGTATCCGCTCACCAACGGGTTTTTGCATTAACAT
```

FIG. 8(B)

1200 TGTATGTCGGCGGATGTTCTATATATCTAAATTTGAATAAATAAACGATAACCGCGTTGGTTTTAGAGGGCATAATAAAGAAATATATTGTTATCGTGTTCGCC
1300 ATTAGGCAGTATAAATTGACGTTCAATGTTGGATATTGTTTCAGTTGCAAGTGAAATTCCTGCAGCCCCGGGGATCCTATATAATAAAATGGGTAGTTCTT
1400 TAGACCATGAGCATATCCTCTCTGCTCTTGCAAAAGCGATGACGAGCTTGTTGGTGAGGATTCTGACAGTGAAATATCAGATCACGTAAGTGAAGATGA
1500 CGTCCAGAGCGATACAGAAGAAGCGTTTATAGATGAGGTACATGAAGTGACGCCAACGTCAAGCGGTAGTGAAAATATTAGACGAACAAAATGTTATTGAA
1600 CAACCAGGTTCTTCATTGGCTTCTAACAGAACTTTGACCCTGCCACACAGAGGACTATTAGAGGTAAGAATAAACATTGTTGGTCAACTTCAAAGTCCACGA
1700 GGCGTAGCCGAGTCTGCACTGAACATTGTCAGATCTCAAAGAGGTCCGACGCGTATGTGCCGCAATATATATGACCCCACTTTTATGCTTCAAACATAAT
1800 TTTTACTGATGAGATAAATTCGGAAAATTGTAAAAATGGACAAATGCTGAGATATCATTTGAAACGTCGGGAATCTATGACAGGTGCTACATTTTCGTGACACG
1900 AATGAAGATGAAAATCTATGCTTTCCTTGGTATTCTGGTAATGACAGCAGTGAGAAAAGATAACCACATGTCCACAGATGACCTCTTTTGATCGATCTTTGT
2000 CAATGGTGTACGTCCTCTGTAATGAGTCGTGATCGTTTTTGATTTTTTGATACGATGCTTTAGAAATGGATGACAAAAGTATACGGCCCACTTCGAGAAAA
2100 CGATGTATTTACTCCTGTAGAAAAAATATGGGATCTCTTTATCCATCAGTGCATACAAAATTACACTCCAGGGGCTCAATTTGACCATAGATGAACAGTTA
2200 CTTGGTTTTAGAGGACGGTGTCGGTTTAGGATGTATATCCCAACAAGCCAAAGTAAGTATGGAATAAAAAATCCTCATGATGTGTGACAGTGTACGAAAGT
2300 ATATGATAAATGGAATGCCCTTATTTGGGAAGAGGAACACAGACCAACGGAGTACCACCTCGGTGAATACTACGTGAAGGAGTTATCAAAGCCTGTGCACGG

FIG. 8(B) CONT.

2400 TAGTTGTCGTAATATTACGTGTGACAAATTGGTTCACCTCAATCCCTTTGGCAAAAAAAGTTACTACAAGAACCGTATAAGTTAACCAATTGTGGGAACCGTG
2500 CGATCAAAACAAACGGAGATACCGGAAGTACTGAAAAACAGTCGCTCCAGGCCAGTGGGAACATCGATGTTTGTGTTTGACGGACCCCTTACTCTCGTCT
2600 CATATAAACCGAAGCCAGCTAAGATGGGTATACTTATTATCATCTTGTGATGAGGATGCTTCTATCAACGAAAGTACCGGTAAACCGCAAAATGGTTATGTA
2700 TTATAATCAAACCTAAAGGGGAGTGGACACGCTAGACCAAAATGTGTCTGTGATGACCTGCAGTAGGAAGACGAAATAGGTGGCCTATGGCATTATTGTAC
2800 GGAATGATAAACATTGCCCTGCATAAAATCTTTTATTATATACAGCCATAATGTCTAGTAGCAAGGGAGAAAGGTTCAAAGTCGCAAAAAATTTATGAGAA
2900 ACCTTTACATGAGCCTGACGTCATCGTTTATGCGTAAGCGTTTAGAAGCTCCTACTTTGAAGAGATATTTGCGCGATAATATCTCTAATATTTTGCCAAA
3000 TGAAGTGCCTGGTACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAAACGTACTTACTGTACTTACTGCCCCCTCTAAAAATAAGGCGAAAGGCAAT
3100 GCATCGTGCAAAAAAATGCAAAAAAAGTTATTTGTCGAGAGCATAATATTGATATGTGCCAAAGTTGTTTCTGACTGACTAATAAGTATAATTTGTTCTAT
3200 TATGTATAAGTTAAGCTAATTACTTATTTTATAATACAACATGACTGTTTTTTAAAGTACAAAAATAAGTTTATTTTGTAAAAAGAGAGAAATGTTTAAAAGT
3300 TTTTGTTACTTTAGAAGAAATTTTGAGTTTTTGTTTTTTTTTAAATAAATAAATAAATAAATTTGTTGTAATTTGGATCCACTAGTTCTTAGAGC
3400 GGCCGCCACCGGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAATTGCGCGCTTGGCGTAATCATGGTCAATAGCTGTTTCCCTGTGTGAAATTG

FIG. 8(B) CONT.


```

3500 TTATCCGCTCAAAATTCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGC
>ColE1_origin
|
3600 TCACTGCCCGCTTTCAGTCGGGAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGGGGAGAGCGGTTTGCGTATTGGGGCGCTCTTCCG
3700 CTTCCTCGCTCACTGACTCGCTGCGCTCGTTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGCGGTAATACGGTTATCCACAGAAATCAGGGGA
3800 TAACGCAGGAAGAACAATGTGAGCAAAAGCCAGCAAAAGCCAGGAACCGTAATAAGCCGCTTGCTGGCGTTTTCATAGGCTCCGCCCCCTGAC
3900 GAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAAGCTCCCTCGTGGGCTCTC
4000 CTGTTCCGACCCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGT
4100 GTAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAAGCCCGACCGCTGGCCCTTATCCGGTAACCTATCGTCTTGAGTCCAACCCGGTA
4200 AGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTTCTTGAAAGTGGTGGCCTAACT
4300 ACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAAACAACCCAC
4400 CGCTGGTAGCGGTGGTTTTTTTGTGCAAGCAGCAGATTACGGCGAGAAAAAAGGATCTCAAGAAGATCCCTTTGATCTTTTCTACGGGGTCTGACGCT
4500 CAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCCTTTAAATTAATAATGAAGTTTAAATCAA
4600 TCTAAAGTATATAGTAACCTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGGATCTGTCTATTTTCGTTTCATCCATAGTTGC
      AMPCILLIN RESISTANCE >

```

FIG. 8(B) CONT.

4700 CTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGTGCAATGATACCGCGAGACCCACGGCTCACCGGCTCCAGAT
 AMPICILLIN RESISTANCE >
 4800 TTATCAGCAATAAACCCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAAATTGTTGCCGGGAAGCTA
 AMPICILLIN RESISTANCE >
 4900 GAGTAAGTAGTTCGCCCAGTTAATAAGTTTGCGCAACGTTGTGCCATTGCTACAGGCATCGTGGTGTACGGCTCGTCGTTTGGTATGGCTTCATTCAGCTC
 AMPICILLIN RESISTANCE >
 5000 CGGTTCCCAACGATCAAGCGGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGTTAGCTCCTTCGGTCCTCCGATCGTTGTGCAGAAAGTAAGTTGGCC
 AMPICILLIN RESISTANCE >
 5100 GCAGTGTATCACTCATGTTATGGCAGCACTGCATAATTCTCTTACTGTCAATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGT
 AMPICILLIN RESISTANCE >
 5200 CATTCTGAGAAATAGTGTATGCGGGCCGACCGAGTTGCTCTTGCCCGGGCTCAATACGGGATAATACCGGCCACATAGCAGAACTTTAAAAGTGCTCATCAT
 AMPICILLIN RESISTANCE >
 5300 TGGAACACGTTCTTCGGGGCGAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAAACCCACTCGTGCACCCCACTGATCTTCAGCATCT
 AMPICILLIN RESISTANCE >
 5400 TTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGCACACGGAAATGTTGAATACTCATACTCT
 AMPICILLIN RESISTANCE >
 5500 TCCTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGACGGGATACATATTGTAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGGC
 CACATTTCCCCGAAAAGTCCAC -- (SEQ ID NO:44) --

FIG. 8(B) CONT.

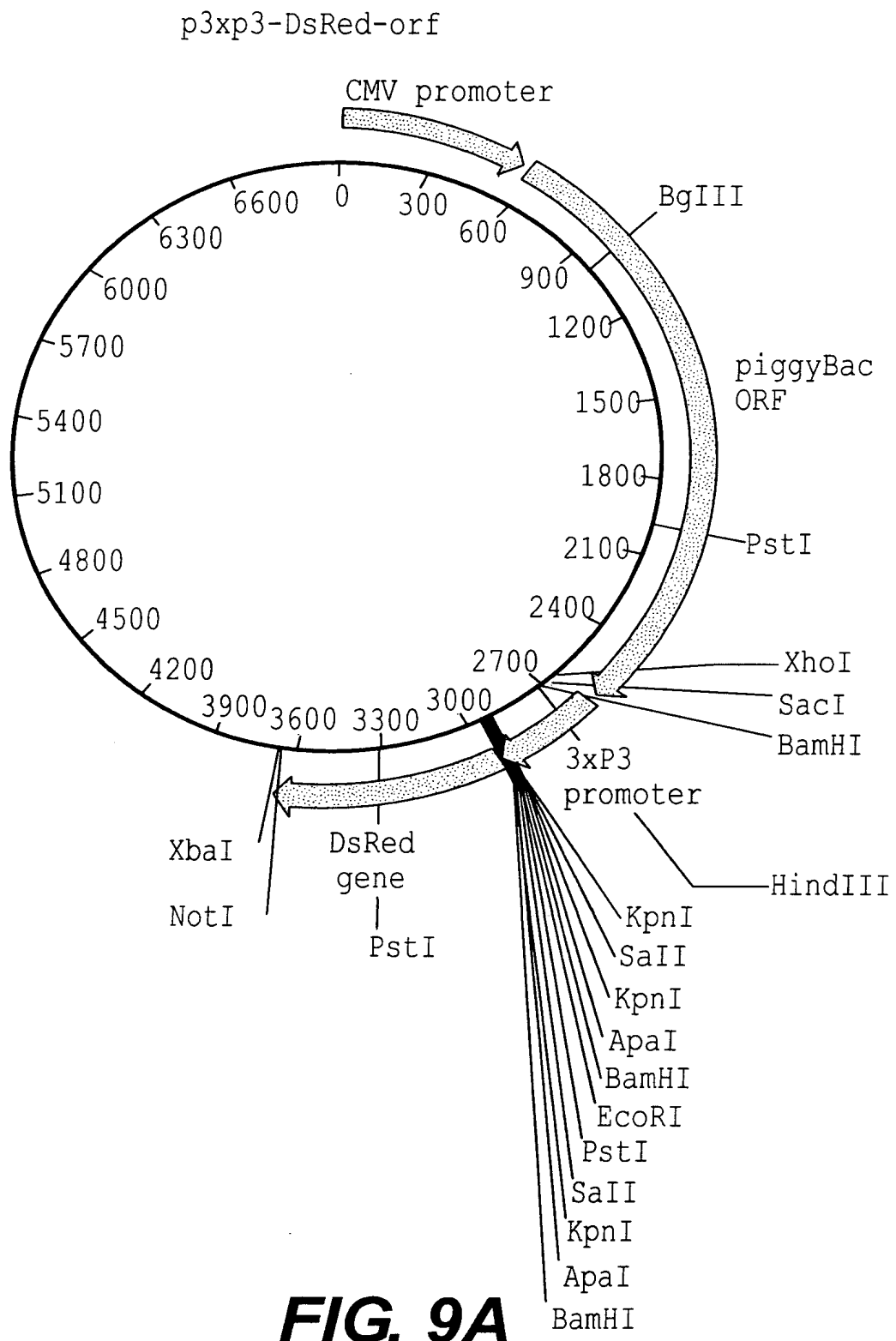


FIG. 9A

p3XP3-DsRed-orf

Sequence Range: 1 to 6984

```
100 TAGTTAATAAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCGCGGTTACATAAATACTACGGTAAATGGCCCGCCTGGCTGACCG
    CMV PROMOTER
200 CCCAACGACCCCGCCATTGACGTCAATAATGACGTATGTTCCCATAGTAACGCCAATAGGGACTTCCATTGACGTCAATGGGTGGAGTATTACGGT
    CMV PROMOTER
300 AAAGTCCCACTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTA
    CMV PROMOTER
400 CATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTGGCAGTACATCAATGGCGGTGGA
    CMV PROMOTER
500 TAGCGGTTTGACTCACGGGGATTCCAAAGTCTCCACCCCATTTGACGTCAATGGGAGTTTGTTTGGCACCAAAATCAACGGGACTTCCAAAAATGTCGTA
    CMV PROMOTER
600 ACAACTCCGCCCCATTGACGCAAAATGGGCGGTAGGCGTGTAACGGTGGAGGTCTATATAAGCAGAGCTGGTTAGTGAACCGTCAGATCCGCTAGCGCTA
    CMV PROMOTER
700 CCGGACTCAGATCCTATATAATAAATGGGTAGTTCCTTAGACGATGAGCATATCCTCTCTGCTCTTCTGCAAAGCGATGACGAGCTTGTTGGTGAGGAT
    PIGGYBAC ORF
800 TCTGACAGTGAAATATCAGATCAGTAAAGTGAAGATGACGTCCAGAGCGGATACAGAGAAGCGTTTATAGATGAGGTACATGAAGTGCAGCCCAACGTCAA
    PIGGYBAC ORF
```

FIG. 9(B)

900
 GCGGTAGTGAATAATTAGACGAACAAAATGTTATTGAACAACCCAGGTTCTTTCATTGGCTTCTTAACAGAAATCTTGACCTTGCCACAGAGGACTATTAGAGG
 PIGGYBAC ORF >

 1000
 TAAGAAATAAACATTGTTGGTCAACTTCAAAGTCCACGAGGCGTAGCCGAGTCTCTGCACCTGAACATTGTCAGATCTCAAAGAGGTCCGACGCGTATGTGC
 PIGGYBAC ORF >

 1100
 CGCAATATATAGACCCACTTTTATGCTTCAAACATAATTTTACTGATGAGATAAATTTCCGAAATTTGTAATAATGGACAAATGCTGAGATATCATTTGAAAC
 PIGGYBAC ORF >

 1200
 GTCGGGAATCTATGACAGGTGCTACATTTCGTGACACGGAATGAAGATGAAATCTATGCTTTCTTTGGTATTCTGGTAATGACAGCAGTGAGAAAAGATAA
 PIGGYBAC ORF >

 1300
 CCACATGTCCACAGATGACCTCTTTTGATCGATCTTTTGTCATGTTGTTGACGTCTCTGTAATGAGTCGTGATCGTTTGTGATACGATGTCTTAGA
 PIGGYBAC ORF >

 1400
 ATGGATGACAAAAGTATACGGCCCACACTTCGAGAAAACGATGATTACTCTCTGTAGAAAAATATGGGATCTCTTTATCCATCAGTGCATACAAAAATT
 PIGGYBAC ORF >

 1500
 AACTCCAGGGCTCATTTGACCATAGATGAACAGTTACTTGGTTTTAGAGGACGGGTGTCCTTTAGGATGTATATCCAAACAAGCCAAGTAAGTATGG
 PIGGYBAC ORF >

 1600
 AATAAAAATCCTCATGATGTGTGACAGTGGTACGAAGTATATGATAAATGGAATGCCTTATTTGGGAAGAGGAACACAGACCAACGGAGTACCACCTCGGT
 PIGGYBAC ORF >

 1700
 GAATACTACGTGAAGGAGTTATCAAAGCCTGTGCACGGTAGTTGTCGTAATATTACGTGTGACAAATTGGTTACCTCAATCCCTTTGGCAAAAAACCTTAC
 PIGGYBAC ORF >

FIG. 9(B) CONT.

1800
 TACAAGAACCGGTATAAGTTAACCATTTGTGGGAACCGTGCGATCAACAACGCGAGATACCGGAAGTACTGAAAAACAGTCGCTCCAGGCCAGTGGGAAC
 PIGYBAC ORF >

1900
 ATCGATGTTTGTGTTTGACGGACCCCTTACTCTCGTCTCATATAAACCGAAGCCAGCTAAGATGGTATACTTATTATCATCTTGTGATGAGGATGCTTCT
 PIGYBAC ORF >

2000
 ATCAACGAAAGTACCGGTAAACCGCAAAATGGTTATGTATTATAATCAAACTAAAGCGGAGTGGACACGCTAGACCAAATGTGTTCTGTGATGACCTGCA
 PIGYBAC ORF >

2100
 GTAGGAAGACGAATAGGTGGCCTATGGCATTTATTGTACGGAATGATAAACATTGCCTGCATAAAATCTTTTATTATATACAGCCATAATGTCAGTAGCAA
 PIGYBAC ORF >

2200
 GGGAGAAAGGTTCAAAGTCGCAAAAAATTTATGAGAAACCTTTACATGAGCCTGACGTCATCGTTTATGCGTAAGCGTTTAGAAGCTCCTACTTTGAAG
 PIGYBAC ORF >

2300
 AGATATTGCGCGATAATATCTCTAATATTTTGCCAAATGAAGTGCCCTGGTACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAAACGTACTTACT
 PIGYBAC ORF >

2400
 GTACTTACTGCCCCCTCTAAAAATAAGCGCAAGGCAAAATGCATCGTGCAAAAAATGCAAAAAAGTTATTTGTGAGAGCATATAATTGATATGTGCCAAAG
 PIGYBAC ORF >

2500
 TTGTTTCTGACTGACTAATAAGTATAATTGTTTCTATTATGTATAAGTTAAGCTAATTACTTATTTTATAATAACAATGACTGTTTTTAAAGTACAAA
 PIGYBAC ORF >

2600
 ATAAGTTATTTTGTAAAAGAGAGAAATGTTTAAAGTTTTGTTACTTTAGAGAAATTTTGAGTTTTTGTTTTTTTTAAATAAAATAACATAAAT
 PIGYBAC ORF >

FIG. 9(B) CONT.

2700
 AAATTGTTTGAATTGGATCTCGAGGTTCCACAAATGGTTAATTCGAGCTCGCCCGGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAAT
 _____ PIGGYBAC ORF _____>
 3XP3 PROMOTER
 2800
 TCAATTAGGATCCAAGCTTATCGATTTCGAACCCCTCGACCGCCGGAGTATAAATAGAGGGCGCTTCGTCTACGGAGCGACAATTCAATTCAAACAAGCAAA
 _____ 3XP3 PROMOTER _____>
 2900
 GTGAACACGTCGCTAAGCGAAAGCTAAGCAATAAACAAGCGCAGCTGAACAAGCTAAACAATCGGGGTACCGCTAGAGTCGACGGTACCGCGGGCCCCGG
 _____ 3XP3 PROMOTER _____>
 3000
 GATCCACCGGTCGCCACCATGAATTCTGCAGTCGACGGTACCGCGGGCCCGGATCCACCGGTCCGCCACCATGGTGGCGCTCCTCCAAGAACGTCAATCAAG
 _____ 3XP3 PROMOTER _____>
 _____ DSRED GENE _____>
 3100
 GAGTTCATGCGCTTCAAGGTGCGCATGGAGGGCACCCGTGAACGGCCACGAGTTCGAGATCGAGGGCGAGGGCGGGCCCCCTACGAGGGGCCACAACA
 _____ DSRED GENE _____>
 3200
 CCGTGAAGCTGAAGGTGACCAAGGGCGGCCCTTCCCTTGGCCATCCTGCGGACATCCTGTCCCCCAGTTCAGTACGGCTCCAAGGTGTACGTGAAGCACCCC
 _____ DSRED GENE _____>
 3300
 CGCCGACATCCCCGACTACAAGAAGCTGTCTTCCCCGAGGGCTTCAAGTGGGAGCGCGTGTGAATTCGAGGACGGCGCGGTGGTGACCGTGACCCAG
 _____ DSRED GENE _____>
 3400
 GACTCCTCCCTGCAGGACGGCTGCTTCATCTACAAGGTGAAGTTCATCGGCGTGAATTCCTCCCTCCGACGGCCCCGTAAATGCAGAAGAAGACCATGGGCT
 _____ DSRED GENE _____>

FIG. 9(B) CONT.

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3500 GGGAGGCCTCCACCGAGCGCCTGTACCCCGCGGACGGCGTGCTGAAGGGCGAGATCCACAAGGCCCTGAAGCTGAAGGACGGCGGCCACTACCTGGTGGA
    DSRD GENE >
3600 GTTCAAGTCCATCTACATGGCCAAGAAGCCCGTGCAGCTGCCCCGGCTACTACTACGTGGACTCCAAGCTGGACATCACCTCCCACAACGAGGACTACACC
    DSRD GENE >
3700 ATCGTGGAGCAGTACGAGCGCACCGAGGGCGCCACCACTGTTCCTGTAGCGCGCGGACTCTAGATCATAAATCAGCCATACCACATTTGTAGAGGTTT
    DSRD GENE >
3800 TACTTGCTTTAAAAAACCTCCCACACCTCCCCCTGAACCTGAAACATAAAATGAATGCAATTGTTGTTAACTTGTATTGCAGCTTATAATGGTTA
3900 CAAATAAAGCAATAGCATCACAAATTTTCCAAATAAAGCATTTTTCACCTGCATTCTAGTTGTGGTTGTCCAAACTCATCAATGTATCTTAAGGCGTA
>f1_single-strand_DNA_origin
4000 AATTGTAAGCGTTAATATTTGTTAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTTTTAACCAATAGCCGAAATCGGCAAAATCCCCTTATAAA
4100 TCAAAAGATAGACCGAGATAGGTTGAGTGTTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGGAAACCG
4200 TCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCCTAATCAAGTTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAGCCCC
4300 CCGATTTAGAGCTTGACGGGGAAAGCCCGCGAACGTTGGCGAGAAAGGAAGGAAAGCGGAGGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGGTC

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FIG. 9(B) CONT.


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4400      ACGCTGCGCGTAACCAACACCCCGCGCTTAATGCGCCGCTACAGGGCGGTGAGTGGCACATTTTCGGGGAATGTGCGGGAACCCCTATTGTT
      >Bacterial_promoter_for_expression_of_Kan_resistance_gene
      |
      |
4500      TATTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCCTGATAAAATGCTTCAATAATATTGAAAAAGGAGAGTCTTGAGGCGGAAAG
      >SV40_early_promoter_and_origin_of_replication
      |
      |
4600      AACCAGCTGTGGAATGTGTGTCAGTTAGGGTGTGGAAGTCCCCAGGCTCCCCCAGCAGGCAGAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCA
4700      GGTGTGGAAGTCCCCAGGCTCCCCAGCAGGCAGAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCATAGTCCCCGCCCTTAACCTCCGCCCATCCCC
4800      GCCCCTAACTCCGCCCCAGTTCCGCCCCCATTTCTCGCCCCCATGGCTGACTAAATTTTTTATTATGCAGAGGCCGAGGCCGCTCGGCCCTCTGAGCTATTC
4900      CAGAAAGTAGTGAGGAGGCTTTTGTGAGGCCTAGGCTTTTGCAAAGATCGATCAAGAGACAGGATGAGGATCGTTTCGCATGATTGAACAAGATGGATTG
      >
5000      CACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATGCCGCCGTGTTCGGGCTGTCAG
      KANAMYCIN RESISTANCE GENE
      >
5100      CGCAGGGCGCCCGGTTCTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAATGCAAGACGAGGCAGCCGGCTATCGTGGCTGGCCACGACGGG
      KANAMYCIN RESISTANCE GENE
      >
5200      CGTTCCTTGCGCAGCTGTGCTCGACGTTGTCACTGAAGCGGGAAGGACTGGCTGCTATTTGGCGGAAGTCCCGGGCAGGATCTCCTGTCACTCACCTT
      KANAMYCIN RESISTANCE GENE
      >

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FIG. 9(B) CONT.

```

5300
GCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAATCGCGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGACCACCAAGCGAAACATCGCA
KANAMYCIN RESISTANCE GENE
>
5400
TCGAGCGAGCACGTTACTCGGATGGAAGCCGGTCTTTGTCGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCCAGCCGAACTGTTCCGCCAGGCT
KANAMYCIN RESISTANCE GENE
>
5500
CAAGCGGAGCATGCCCGACGGCGGAGGATCTCGTCGTGACCCATGGCGATGCCCTGCTGCCGAATATCATGGTGGAAAAATGGCCGCTTTTCTGGATTTCATC
KANAMYCIN RESISTANCE GENE
>
5600
GACTGTGGCCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCC
KANAMYCIN RESISTANCE GENE
>
5700
TCGTGCTTTACGGTATCGCCGCTCCCAGATTGCGACGGCATCGCCTTCTATCGCCTTCTTGACGAGTCTTCTGAGCGGGAATCTGGGGTTCGAAATGACC
KANAMYCIN RESISTANCE GENE
>
5800
GACCAAGCGACGCCCAACCTGCCATCACGAGATTTCGATTCCACGCCGCCCTTCTATGAAAGTTGGGCTTCGGAATCGTTTTCCGGGACGCCGGCTGGA
5900
TGATCCTCCAGCGCGGGATCTCATGCTGGAGTTCTTCGCCCAACCTAGGGGGAGGCTAACTGAAACACCGGAAGGAGACAATACCGGAAGGAACCCGCGC
>Herpes_simplex_virus_(HSV)_thymidine_kinase_(TK)_polyA_signals
6000
TATGACGGCAATAAAAGACAGATAAAACGCACCGGTGTTGGTTCGTTTGTTCATAAACGCGGGGTTTCGGTCCCAGGGCTGGCACTCTGTGCGATACCCCA
6100
CCGAGACCCCATTTGGGGCCAATACGCCCGCGGTTCTTCCCTTTTCCCCACCCCCACCCCAAGTTCGGGTGAAGGCCCCAGGGCTCGCAGCCCAACGTCGGGG

```

FIG. 9(B) CONT.

```

6200 CCGCAGGCCCTGCCATAGCCTCAGGTTACTCATATATACTTTAGATTGATTTAAAACTTCATTTTAAATTTAAAGGATCTAGGTGAAGATCCTTTTGA
    >pUC_plasmid_replication_origin
    |
    |
6300 TAATCTCATGACCAAAATCCCTTAACGTGAGTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTTTCTG
6400 CGCGTAATCTGCTGCTTGCAACAAAAAACCCGCTACCAGCGGTGTTGTGTCGGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAACCTGGCT
6500 TCAGCAGAGCGCAGATACCAAAATACTGTCCCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCGCCTACATAACCTCGCTCTGCT
6600 AATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCGTGCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGTCCGGGCTGA
6700 ACGGGGGTTCGTGCACACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAG
6800 GGAGAAAGCGGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGAAACGCCCTGGTATCTTATAGTCCTGT
6900 CGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTGTGATGCTCGTCAGGGGGCGGAGCCCTATGGA AAAACGCCCAGCAACCGGGCCTTTTACGGTTC
CTGGCCTTTTGCTGGCCCTTTTGCTCACATGTTCTTTCCCTGCGTTATCCCCTGATTCTGTGGATAACCGTATTACCGCCCATGCAT -- (SEQ ID NO:45) --

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FIG. 9(B) CONT.

PCR11 - ITR

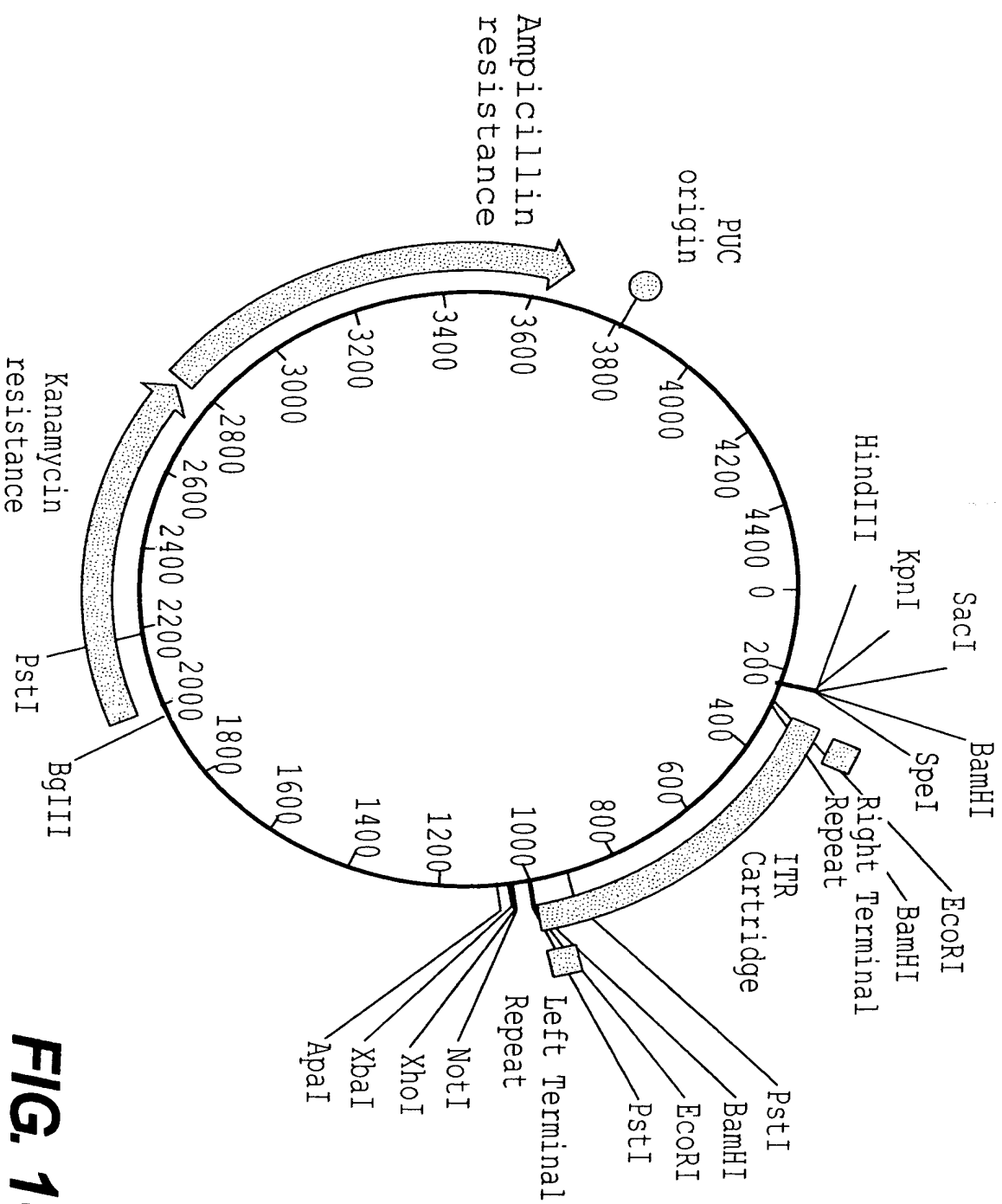


FIG. 10A

Sequence Range: 1 to 4613

```
100 AGCGCCCAATACGCAACCGCCTCTCCCGCGCGTTGGCCGATTCAATATGCAGCTGGCACGACAGGTTTCCCGACTGGAAAGCGGGCAGTGAGCGCAA
200 CGCAATTAATGTAGTTAGCTCACTCATTAGGCACCCAGGCTTTACACTTTATGCTTCCGGCTCGTATGTTGTGTGGAATTGTAGCGGATAACAATTT
300 CACACAGGAACAGCTATGACCATGATTACGCCAAGCTTGGTACCGAGCTCGGATCCACTAGTAACGGCCCGCAGTGTGCTGGAATTCCGGCTTGATCCC
>
400 ATGGGTCAATTTACGCAGACTATCTTTCTAGGGTTAATCTAGCTGCATCAGGATCATATCGTCGGGTCTTTTTCGGGCTCAGTCATCGCCCCAAGCTGG
L H Q D H I V G S F F R L S H R P S W>
B (CAPSID COMPONENT;533); CODON START=1; DB XREF=P >
L H Q D H I V G S F F R L S H R P S W>
PROCESSED B; CODON START=1 [SPLIT] >
RIGHT TERMINAL REPEAT >
500 CGCTATCTGGGCATCGGGGAGGAAGACCCGTCGCCCTTTTCCCGCGAGGTTGAAGCGGCATGGAAAGAGTTGCCGAGGATGACTGCTGCTGCATTGACG
R Y L G I G E E E A R A F S R E V E A A W K E F A E D D C C I D>
B (CAPSID COMPONENT;533); CODON START=1; DB XREF=PID:G215108; TRA [SPLIT] >
R Y L G I G E E E A R A F S R E V E A A W K E F A E D D C C I D>
PROCESSED B; CODON START=1 [SPLIT] >
```

FIG. 10(B)

600

TTGAGCGAAACGCACGTTTACCATGATTCGGGAAGGTGTGGCCATGCACGCCCTTAAACGGTGAACCTGTTTCAGGCCACCTGGGATACCAGTTC
 V E R K R T F T M I R E G V A M H A F N G E L F V Q A T W D T S S>
 B (CAPSID COMPONENT;533); CODON START=1; DB XREF=PID:G215108; TRA [SPLIT]
 V E R K R T F T M I R E G V A M H A F N G E L F V Q A T W D T S S>
 PROCESSED B; CODON START=1 [SPLIT]
 >

700

GTCGCGGCTTTCGGGACACAGTTCGGGATGGTCAGCCCGAAGCGCATCAGCAACCCGAACAATACCGCGGCAGCCGGAACCTGCCGTGCCGGTGTGCAG
 S R L F R T Q F R M V S P K R I S N P N N T G D S R N C R A G V Q>
 B (CAPSID COMPONENT;533); CODON START=1; DB XREF=PID:G215108; TRA [SPLIT]
 S R L F R T Q F R M V S P K R I S N P N N T G D S R N C R A G V Q>
 PROCESSED B; CODON START=1 [SPLIT]
 >

800

ATTAATGACAGCGGTGGCGCTGGGATATTACGTCAGCGGACGGGTATCCTGGCTGGATCCGCGAGAATGGACATGGATACCCCGTGAGTTACCCG
 I N D S G A A L G Y Y V S E D G Y P G W M P Q K W T W I P R E L P>
 B (CAPSID COMPONENT;533); CODON START=1; DB XREF=PID:G215108; TRA [SPLIT]
 I N D S G A A L G Y Y V S E D G Y P G W M P Q K W T W I P R E L P>
 PROCESSED B; CODON START=1 [SPLIT]
 >

900

GCGGCGCGCCTCGTTTCATTCACGTTTGTGAACCCCGTGGAGGACGGGCAGACTCGCGGTGCAAAATGTTTACAGCGGTGATGGAGCAGATGAAGATGCT
 G G R A S F I H V F E P V E D G Q T R G A N V F Y S V M E Q M K M L>
 B (CAPSID COMPONENT;533); CODON START=1; DB XREF=PID:G215108; TRA [SPLIT]
 G G R A S F I H V F E P V E D G Q T R G A N V F Y S V M E Q M K M L>
 PROCESSED B; CODON START=1 [SPLIT]
 >

FIG. 10(B) CONT.

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1000
CGACACGCTGCAGAACACGCAGCTAGATTAAACCCTAGAAAGATAATCATATTGTGACGTACGTTAAAGATAATCATGCGTAAATTTGACGCATGGGATCC
D T L Q N T Q> --(SEQ ID NO:47) --
B (CAPSID COMPO >
D T L Q N T Q> --(SEQ ID NO:47) --
PROCESSED B; CO >
LEFT TERMINAL REPEAT >
1100
AAGCCGAATTCTGCAGATATCCATCACACTGGCGCGCGCTCGAGCATGCATCTAGAGGGCCCAATTGCCCCATATAGTGAGTCGTATTACAATTCACTGGC
1200
CGTCGTTTACAACGTCGTGACTGGGAAAACCCCTGGCGTTACCCAACTTAATCGCCCTTGCAGCACATGCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAG
1300
GCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAATGGGAATGGGACGGCCCTGTAGCGGCGCATTAAGCGCGGCGGGTGTGGTGGTTACGC
1400
GCAGCGTGACCGCTACACTTGCCAGCGGCCCTAGCGCCCGCTCCTTTCGCTTCTTCCCTTCTGCCACGTTCCGCCGGCTTCCCCCGTCAAGCTCT
1500
AAATCGGGGGCTCCCTTTAGGGTCCGATTTAGAGCTTTACGGCACCTCGACCGCAAAAACCTTGATTTGGGTGATGGTTCACGTAGTGGGCCATCGCCC
1600
TGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACTCTTGTTCCAAACCTGGAACAACACTCAACCCATATCGCGGTCTATT
1700
CTTTTGATTTATAAGGGATTTTGCCGATTTTCGGCCTATTGGTTAAAAAATGAGCTGATTTAAACAATTCAGGGCGCAAGGGCTGCTAAAGGAACCGGAAC
1800
ACGTAGAAAGCCAGTCCGCAGAAACGGTGCTGACCCCGGATGAATGTCAGCTACTGGGCTATCTGGACAAGGGAAAAACGCAAGCGCAAAAGAGAACGAGG

```

FIG. 10(B) CONT.

1900 TAGCTTGCACTGGGCTTACATGGCGATAGCTAGACTGGGCGGTTTATGGACAGCAAGCAACCGGAATTGCCAGCTGGGGCGCCCTCTGGTAAGTTGG
2000 GAAGCCCTGCAAAGTAAACTGGATGGCTTCTTGCCCGCCAAGGATCTGATGGCGCAGGGGATCAAGATCTGATCAAGAGACAGGATCAGGATCGTTTCGC
2100 ATGATTGAACAAGATGGATTGCACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTTCGGCTATGACTGGGCACAACAGACAATCGGCTGCTCTGATG
2200 CCGCCGTGTTCCGGCTGTCAAGCGCAGGGGGCCCCGGTTCCTTTTGTCAAGACCGACCTGTCCGGTGCCCTGAATGAACCTGCAGGACGAGGCAGCGCGGCT
2300 ATCGTGGCTGGCCACGACGGGCGTTCCCTTGCGCAGCTGTGCTCGACGTTGTCACTGAAGCGGGAAGGACTGGCTGCTATTGGCGGAAGTGCCCGGGCAG
2400 GATCTCCTGTCACTCGCCCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAATCCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCG
2500 ACCACCAAGCGAAACATCGCATCGAGCGAGCACGTACTCGGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCGCC
2600 AGCCGAACTGTTCCGCCAGGCTCAAGGCGGCGATGCCCCAGCGCGAGGATCTCGTCGTGATCCATGGCGATGCCCTGCTTGCCGAATATCATGGTGGAAT
2700 GGCCGCTTTTCTGGATTCAACGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGATACCCGTGATATTGCTGAAGAGCTTGGCG
2800 GCGAATGGGCTGACCGCTTCCTCGTCTTTACGGTATCGCCGCTCCCGATTCCGACGGCATCGCCCTTCTATCGCCCTTCTTGACGAGTTCTTCTGAATTGA
2900 AAAAGGAAGATGAGTATTCAACATTTCCGTTGTCCGCCCTTATCCCTTTTGTGGGCATTTTGCCCTTCCCTGTTTTTGTCTCAGGAAACCGCTGTGTGA

FIG. 10(B) CONT.

3000 AAGTAAAAGATGCTGAAGATCAGTTGGGTGCACGAGTGGGTTACATCGAACTGGATCTCAACACGCGGTAAAGATCCTTGAGAGTTTTCGCCCCCGAAGAACG
3100 TTTTCCAATGATGAGCACTTTTAAAGTTCTGCTATGTCTACACTATTATCCCGTATTGACGCCGGGCAAGAGCAACTCGGTGCGCCGGCGGTTATTCT
3200 CAGAATGACTTGGTTGAGTACTCACCAGTCACAGAAAAGCATCTTACGGATGGCATGACAGTAAGAGAAATTATGCAGTGTCTGCCATAACCATGAGTGATA
3300 ACAC TGGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGAGCTAACCGCTTTTTTGCACAACATGGGGGATCATGTAACTCGCCTTGATCGTTG
3400 GGAACCGGAGCTGAATGAAGCCATACCAAAACGACGAGAGTGACACCACGATGCCTGTAGCAATGCCAACACGTTGCGCAAACTATTAACTGGCGGAAC TA
3500 CTTACTTAGCTTCCCGGCAACAATTAAATAGACTGGATGGAGCGGGATAAAGTTGCAGGACCACTTCTTGGCTCGGCCCTTCCGGCTGGCTGGTTTATTG
3600 CTGATAAATCTGGAGCCCGTGAGCGTGGGTCTCGCGGTATCATTTGCAGCACTGGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGG
3700 GAGTCAGGCAACTATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAAGCATTGGTAACTGTCAGACCAAGTTTACTCATATATA
3800 CTTTAGATTGATTTAAAAC TTCA TTTTAAATTTAAAGGATCTAGGTGAAGATCCTTTTGTATAATCTCATGACCAAAAATCCCCTTAACGTGAGTTTTCGT
3900 TCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGAGATCCTTTTCTTCTGCGGTAATCTGCTGCTTGCAACAAAAAACCCCGCT
4000 ACCAGCGGTGGTTGTTGCCGGATCAAGAGCTACCAACTCTTTTCCGAAGGTAAC TGGCTTCAGCAGAGCGCAGATACCAAA TACTGTCTTCTTAGTG

FIG. 10(B) CONT.

4100 TAGCCGTAGTTAGCCACCACCTTCAAGAACTCTGTAGCACCGCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGT
TAGCCGTAGTTAGCCACCACCTTCAAGAACTCTGTAGCACCGCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGT
4200 CGTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGCGGCAGCGGTGCGGCTGAACGGGGGGTTCTGTGCACACAGCCCAGCTTGGAGCGAAC
CGTGTCTTACCGGGTTGGACTCAAGACGATAGTTACCGGATAAGCGGCAGCGGTGCGGCTGAACGGGGGGTTCTGTGCACACAGCCCAGCTTGGAGCGAAC
4300 GACCTACACCGAACTGAGATACCTACAGCGTGAGCATTTGAGAAAGCGCCACGCTTCCCCAAGGGAGAAAGCGGGACAGGTATCCGGTAAGCGGCAGGGTC
GACCTACACCGAACTGAGATACCTACAGCGTGAGCATTTGAGAAAGCGCCACGCTTCCCCAAGGGAGAAAGCGGGACAGGTATCCGGTAAGCGGCAGGGTC
4400 GGAACAGGAGCGCACGAGGGAGCTTCCAGGGGAAACGCCCTGGTATCTTTATAGTCCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTGT
GGAACAGGAGCGCACGAGGGAGCTTCCAGGGGAAACGCCCTGGTATCTTTATAGTCCCTGTCGGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTGT
4500 GATGCTCGTCAGGGGGCGGAGCCTATGGAAAAACGCCCAGCAACGGGCCCTTTTACGGTTCCTGGCCCTTTTGCTGGCCCTTTTGCTCACATGTTCTTTCC
GATGCTCGTCAGGGGGCGGAGCCTATGGAAAAACGCCCAGCAACGGGCCCTTTTACGGTTCCTGGCCCTTTTGCTGGCCCTTTTGCTCACATGTTCTTTCC
4600 TGCCTATCCCCTGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGCGACCCGAAACGAGCCGAGTCAGTGAGC
TGCCTATCCCCTGATTCTGTGGATAACCGTATTACCGCCTTTGAGTGAGCTGATACCGCTCGCCGCGACCCGAAACGAGCCGAGTCAGTGAGC
GAGGAAGCGGAAG -- (SEQ ID NO:46) --

FIG. 10(B) CONT.

pXL-Bac

AMPCILLIN
RESISTANCE

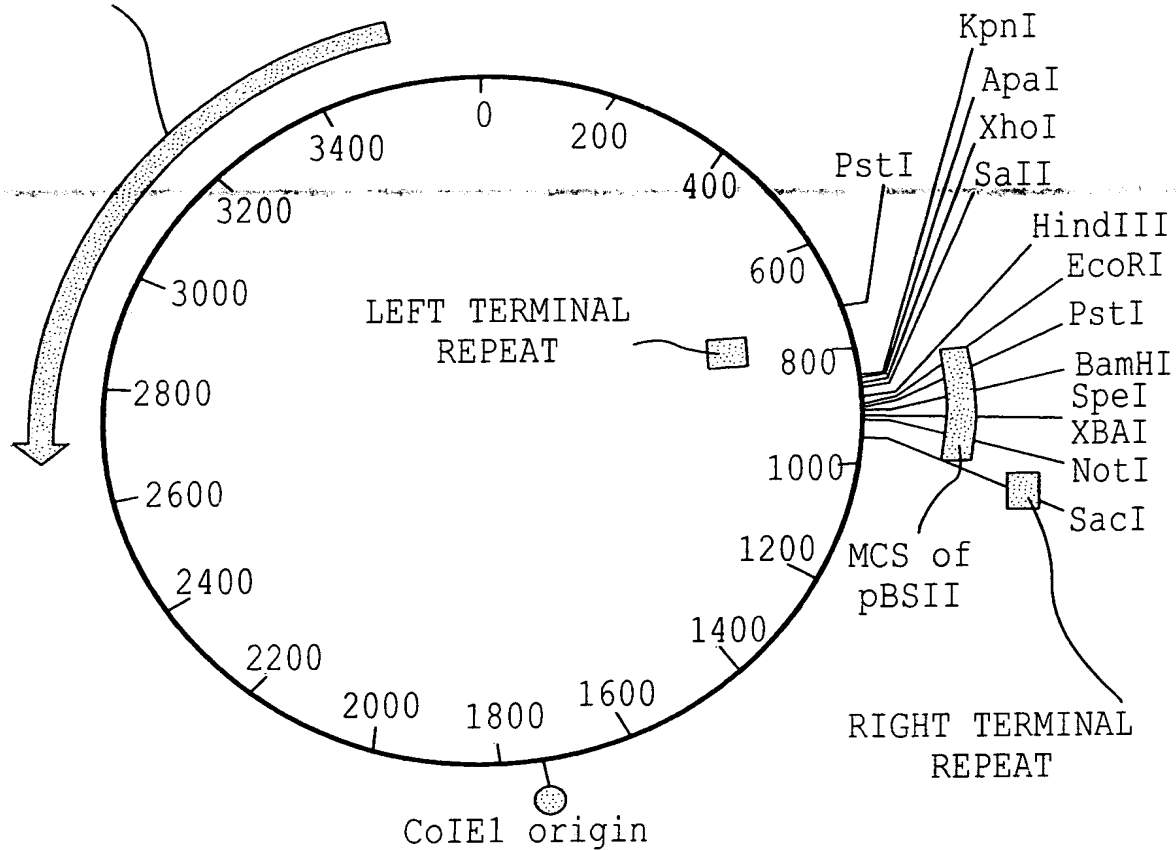


FIG. 11

p(PZ)-Bac-EYFP

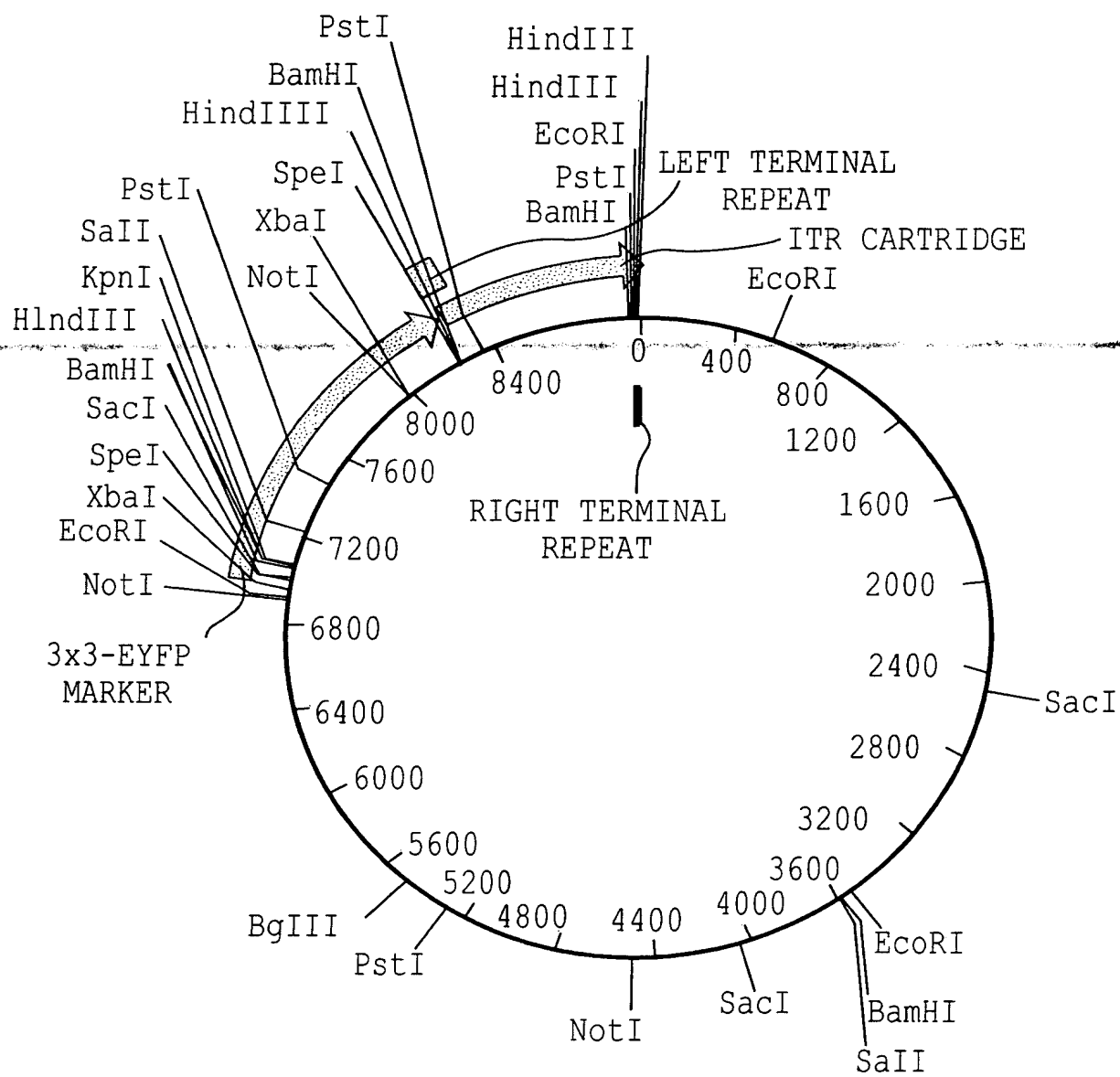


FIG. 12

p (PZ) -Bac-EYFP
Sequence Range: 1 to 8999

100
ACCGAAGTATACACTTAAATTCAGTGCACGTTTGCTGTGAGGAAAGGTTGTGTGGGACGAATTTTTTTTGA AAAACATTAA C C C C T T A C G T G G A A T
200
AAAAAAAATGAAATATTGCAAAATTTGCTGCAAAAGCTGTGACTGGAGTAAAAATTAATTCACGTCGCCGAGTGCTGCTATTAGAGAAAAATTGTGGGAGCA
300
GAGCCTTGGGTGCAGCCTTGGTGAAAACTCCCAAAATTTGTGATACCCACTTTAATGATTGCGAGTGAAGGCTGCACCTGCAAAAGGTCAGACATTTAAA
400
AGGAGCGGACTCAACGCAGATGCCGTACCTAGTAAAGTGATAGAGCCTGAACCAAGATAAAAGAGGCTATACCAGTGGGAGTACACAAAACAGAGT
500
AAGTTTGAATAGTAAAAAAATCATTTATGTAAACAATAACGTGACTGTGCGTTAGGTCCCTGTTCA TTGTTTAA TGAAAAATAAGAGCTTGAGGGAAAAAA
600
TTCGTA CTTTGGAGTACGAAATGCGTCGTTTAGAGCAGCAGCCCGAATTCACTGGCCGTCGTTTACAACTGTCGTACTGGGAAAAACCCTGGCGTTACCCCA
700
ACTTAATCGCCTTG CAGCACATCCCCCTTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCCTGAATGGC
800
GAATGGCGCTTTGCCTGGTTTCCGGCAC CAGAGCGGTGCCGGAAGCTGGCTGGAGTCCGATCTTCCTGAGGCCGATACTGTCTGTCCTCCCTCAAACT
900
GGCAGATGCACGGTTACGATGGGCCCCATCTACACCAACGTAACTATCCCATTACGGTCAATCCGCCGTTTGTTC C C C A C G G A G A A T C C G A C G G T T G T T A
1000
CTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGGCAATTATTTTTTGATGGCGTTAACTCGGCGTTTCATCTGTGTGCAACGGG
1100
CGCTGGTTCGGTTACGGCCAGGACAGTCGTTTGCCCGTCTGAATTTGACCTGAGCGCAATTTTACGGCCGGAGAAAAACCCCTCGCGGTGATGGTGCTGC

FIG. 12(B)

1200 GTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGGCATTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCAG
1300 CGATTTCCATGTTGCCACTCGCTTTAATGATGATTTACGCCCGCTGTACTGGAGGCTGAAGTTCAGATGTGCCGGCAGTTGCGTGACTACTACCGGTA
1400 ACAGTTTCTTATGGCAGGTGAAACGCAGGTCCCGAGCGGCACCGCCCTTTCCGGCGGTGAATTAATCGATGACGCTGGTGGTTATGCCGATCCCGTCA
1500 CACTACGCTGAACGTCGAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTGGGTGGTTGAAC TGACACACCCCGACGGCACGCTGAT
1600 TGAAGCAGAAGCCTGCGATGTCCGTTTCCGGCAGGTGCCGATTGAAATGGTCTGCTGCTGAACGGCAAGCCGTTGCTGATTTCGAGGGCGTTAACCGT
1700 CACGAGCATCATCCTCTGCA TGGTCAGGTCA GTGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAACAACTTTAACGCCGTGCGCTGTT
1800 CGCATTA TCCGAACCATCCGCTGTGTA CACGCTGTGGACCCGCTACGGCCTGTATGTGGTGATGAAGCCAATAATTGAAACCCACGGCATGGTGCCAAT
1900 GAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGGATGAGCGAACCGTAACCGGAATGGTGCAGCGCGATCGTAATCACCCGAGTGTGATCATCTGG
2000 TCGCTGGGGAATGAATCAGGCCACGGCGCTAATCACGACCGCGTGTATCGCTGGATCAAATCTGTGATCCTTCCCGCCCGGTGCAGTATGAAGCGCGG
2100 GAGCCGACACCGGCCACCGATATTATTTGCCCGATGTACCGCGCGGTGGATGAAGACCAGCCCTTCCCGGCTGTGCCGAAATGGTCCATCAAAAAATG
2200 GCTTTCGCTACCTGGAGACGCGCCCGCTGATCCTTTGGCAATACGCCACCGCATGGGTAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGCGCGTTT
2300 CGTCAGTATCCCCGTTTACAGGGCGGCTTCGCTCTGGACTGGGTGGATCAGTCGCTGATTAAATATGATGAAACGGCAACCCGTTGGTCGGCTTACGGCG

FIG. 12(B) CONT.

2400 GTGATTTTGGCGATACGCCGAACGATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCCGATCCAGCGCTGACGGAAGCAAACACCA
2500 GCAGCAGTTTTCCAGTTCGGTTTATCCGGGGCAAACCATCGAAGTGACCAGCGAATACCTGTTCCGTCATAGCGATAACGAGCTCCTGCAC TGGATGGTG
2600 GCGCTGGATGGTAAGCCGGCTGGCAAGCGGTGAAGTGCCCTCTGGATGTGCTCCACAAGGTAAACAGTTGATTGAACTGCCTGAACTACCCGCAGCCGGAGA
2700 GCGCCGGGCAACTCTGGCTCACAGTACGGCTAGTGCAACCGAACCGACCGCATGGTCAGAAAGCCGGGCACATCAGCGCCCTGGCAGCAGTGGCGTCTGGC
2800 GGAAACCTCAGTGTACGCTCCCCCGCGCTCCCACGCCATCCCGCATCTGACCCACCAGCGAAATGGATTTTTCATCGAGCTGGGTAATAAGCGTTGG
2900 CAATTTAACCGCCAGTCAGGCTTCTTTACAGATGTGGATTGGCGATAAAACAAC TGTGACGCGCTGCGGATCAGTTCACCCGTGCACCCGTGG
3000 ATAACGACATTGGCGTAAGTGAAGCGACCCGCAATTGACCCTAACGCCTGGGTGGAACGCTGGAAGGGGGGCCATTACCAGCCGGAAGCAGCGTTGTT
3100 GCAGTGCACGGCAGATACACTTGCTGATGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAAAACCTAC
3200 CGGATTGATGGTAGTGGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATTGGCCTGAACTGCCAGCTGGCGC
3300 AGGTAGCAGAGCGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAAC TATCCCGACCGCCTTACTGCCGCCTGTTTACCGCTGGGATCTGCCATTGTC
3400 AGACATGTATACCCCGTACGTCTTCCCGAGCGAAAACGGTCTGCGCTGCGGACGCGCGAATTGAATTATGGCCCAACCCAGTGGCGGCGGACTTCCAG
3500 TTCAACATCAGCCGTACAGTCAACAGCAACTGATGGAACACGACCATCGCCATCTGCTGCACGCGGAAGGCCACATGGCTGAATATCGACGGTTTCC

FIG. 12(B) CONT.

3600 ATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGGGGGAATCCAGCTGAGCGCCGGTCGCTACCATTACCAGTTGGTCTGGTGTCTGGGG
3700 ATCCGTCGACTAAGGCCAAAGAGTCTAATTTTGTTCATCAATGGGTATAACATAATGGGTATATTATAAGTTGTTTTAAGTTTTTGTAGACTGATAAG
3800 AATGTTTCGATCGAATATTCCATAGAACAAACAATAGTATTACCTAATTACCAAGTCTTAATTTAGCAAAAATGTTATTGCTTATAGAAAAATAAATTAT
3900 TTATTTGAAATTTAAAGTCAACTTGTCAATTTAATGTCTTGTAGACTTTTGAAGTCTTACGATACAATTAGTATCTAAATATACATGGGTTTCATTCTACAT
4000 TCTATATTAGTGATGATTTCTTTTAGCTAGTAATAACATTTTAATTATATTTCGGCTTTTGATGATTTTCTGATTTTTTCCGAAACGGATTTTCGTAGACCCTTT
4100 CGATCTCATAATGGCTCATTTTATTGCGATGGACGGTCAGGAGAGCTCCACTTTTGAATTTCTGTTCGCAGACACCCGCAATTTGTAGCACATAGCCGGGAC
4200 ATCCGGTTTGGGGAGATTTTCCAGTCTCTGTGTGCAATTGGTTTTTCGGGAATGCGTTGCAGGGCGCATACGCTCTATATCCTCCGAACGGCGCTGGTTGACC
4300 CTAGCATTTACATAAGGATCAGCAGCAAAATTTGCCTCTGCTTCATTGCCCGGAATCACAGCAATCAGATGTCCCTTTCGGTTACGATGGATATTCAGGT
4400 GCGAACCGCACACAAAGCTCTCGCCGCACACTCCACACTGATATGGTCGCTCGCCCTGTGGCCCGGCATATGGATCTTTAAGGTCGTTGGACTGCACAAAG
4500 CTCCTTGCTGCACATTTTGCAGGAGTACGGCCTTTGACCCGTGTGCAATCGCATGTGTCCGCCCCAGCTTGTTCTCGGAAATAAACTTCTTGGAGCAGATGC
4600 GGCCGCCCGGGTGGCGGAAGAACTCCAGCATGAGATCCCCCGCGCTGGAGGATCATCCAGCCGGCTCCCGGAAACGATTCGGAAGCCCAACCTTTTCAT
4700 AGAAGCGCGGTGGAATCGAAATCTCGTGATGGCAGGTTGGCGGTCGCTTGGTCGGTCAATTCGAACCCACAGATCCCGCTCAGAAAGAACTCGTCAAGA

FIG. 12(B) CONT.

4800
AGCGGATAGAAGCGGATGCGCTGCGAATCGGGAGCGGGGATACCGTAAAGCACGAGGAAGCGGTACGCCCATTCGCCGCCCAAGCTCTTCAGCAATATCAC
4900
GGGTAGCCAAACGCTATGTCTGTATAGCGGTCCGCCACACCCAGCCGGCCACAGTCGATGAATCCAGAAAAGCGGCCATTTTCCACCATGATATTCGGCAA
5000
GCAGGCATCGCCATGGGTACGACGAGATCCTCGCCCGTCGGGGCATGCGCGCCTTGAGCCTGGCGAACAGTTCGGCTGGCGCGAGCCCCCTGATGCTCTTCG
5100
TCCAGATCATCCTGATCGACAAGACCGGCTTCCATCCGAGTACGTGCTCGCTCGATGCGATGTTTCGCTTGGTTCGAATGGGCAGGTAGCCGGGATCAA
5200
GGGTATGCAGCCGCCGCAATTGCATCAGCCATGATGGATACTTTCTCGGCAGGAGCAAGGTGAGATGACAGGAGATCCTGCCCCCGGCACCTTCGCCCAATAG
5300
CAGCCAGTCCCTTCCCGCTTCAGTGACAACGTTCGAGCACAGCTGCGCAAGGAACGCCCGCTCGTGGCCAGCCACGATAGCCGGGCTGCCCTCGTCCCTGCAGT
5400
TCATTCAGGGCACCGGACAGGTTCGTCTTGACAAAAGAACCGGGCGCCCTTGGCTGACAGCCGGGAACACGGCGGCATCAGAGCAGCCGATTGTCTGTT
5500
GTGCCCAGTCATAGCCGGAATAGCCTCTCCACCCCAAGCGGCCGAGAACCTGCGTGCAATCCATCTTGTTCATCATGCGGAAACGATCCCTCATCCTGTCTC
5600
TTGATCAGATCTTGATCCCCCTGGGCCATCAGATCCTTGGCGGCAAGAAAGCCATCCAGTTTACTTTGCAGGGCTTCCCAACCTTACCAGAGGGCGCCCCA
5700
GCTGGCAATTCCGGTTCGCTGTCCATAAAACCGCCCCAGTCTAGCTATCGCCCATGTAGCCCACTGAAGCCCACTGCAAGCTACCTGCTTCTCTTTGCGCTTGGCT
5800
TTTCCCTTGTCAGATAGCCCAGTAGCTGACATTTCATCCGGGGTCAGCACCGTTTCTCGGGACTGGCTTCTACGTTCTACGTTCCGCTTCCCTTTAGCAGCCCTT
5900
GCGCCCTGAGTGCTTGGCGCAGCGTGAAGCTAATTTCATGGTTATAAATTTTGTAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGCCAAAATCC

FIG. 12(B) CONT.

6000 CTTATAAATCAAAGAATAGCCGAGATAGGTTGAGTGTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCG
 6100 AAAAACCGTCTATCAGGGCGATGGCCGATCAGCTTATGCGGTGTGAAATACCGCACAGATCGGTAAGGAGAAATACCGCATCAGGCGCTCTTCCGCTT
 6200 CCTCGCTCACTGACTCGCTCGGCTCGGCTCGGGGAGCGGTATCAGCTCACTCAAAGGGGTAATACGGTTATCCACAGAAATCAGGGGATAA
 6300 CGCAGGAAGAACATGTGAGCAAAGGCCAGCAAAAGCCAGGAACCGTAAAAAAGCCCGGTTGCTGGCGTTTTCATAGGCTCCGCCCCCTGACGAG
 6400 CATCACAAAATCGACGCTCAAGTCAGAGGTGGGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGGCTCTCCTG
 6500 TTCCGACCCCTGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTA
 6600 GGTGTTCCGCTCCAAGCTGGGCTGTGTGACGAACCCCCGTTACAGCCCGACCGCTGGCCCTTATCCGGTAACATATCGTCTTGAGTCCAACCCGGTAAGA
 6700 CACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTCTTGAAGTGGTGGCTAACTACG
 6800 GCTACACTAGAAGGACAGTATTGGTATCTGGCTCTGCTGAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAACAACACCCGC
 6900 TGGTAGCGGCGGTTTTTTGTTGCAAGCAGCAGATTACCGCGAGAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTTACTGAACGGTGATCCCCA
 7000 CCGGAATTGCGGCGCGGAATTCTCATGTTTGACAGCTTATCATCGATAAGCTGGCCGCTCTAGAACTAGTGTCCACAATGGTTAATTCGAGCTCGCC
 7100 CCGGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAATTCAATTAGGATCCAAAGCTTATCGATTTCGAACCCCTCGACCCCGGAGTATAAATAGA
 3XP3-EYFP MARKER
 3XP3-EYFP MARKER
 3XP3-EYFP MARKER
 3XP3-EYFP MARKER

FIG. 12(B) CONT.

7200
 GCGCTTCGTCTACGGAGCGACAATTCAATTCAAACAAGCAAAAGTGAACACGTCGCTAAGCGAAAGCTAAGCAAATAAACAAGCGCAGCTGAACAAGCTA
 3XP3-EYFP MARKER >

7300
 AACAAATCGGGGTACCGCTAGAGTCGACGGTACGATCCACCGGTGCGCCACCATTGGTGAGCAAGGGCGGAGGAGCTGTTCAACGGGGTGGTGCCCATCCTGGT
 3XP3-EYFP MARKER >

7400
 CGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGGCGATGCCACCTACGGCAAGCTGACCCCTGAAGTTCATCTGCAACC
 3XP3-EYFP MARKER >

7500
 ACCGGCAAGCTGCCCCGTGCCCTGGCCCCACCCTCGTGACCACCTTCGGCTACGGCCTGCAGTGCTTCGCCCGCTACCCCCGACCACATGAAGCAGCAGCAGCT
 3XP3-EYFP MARKER >

7600
 TCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCGAGGTGAAGTTCGAGGG
 3XP3-EYFP MARKER >

7700
 CGACACCCCTGGTGAACCCGCATCGAGCTGAAGGCGATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACAGCCACAAC
 3XP3-EYFP MARKER >

7800
 GTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACCTTCAAGATCCGCCCAACAACATCGAGGACGGCAGCGTGCAGCTCGCCCGACCACTACC
 3XP3-EYFP MARKER >

7900
 AGCAGAACACCCCATCGGCGACGGCCCCGTGCTGTGCCCGACAAACCACCTACCTGAGCTACCACTCGCCCTGAGCAAGAACCCCAACGAGAAGCGCGGA
 3XP3-EYFP MARKER >

8000
 TCACATGGTCTGCTGGAGTTCGTGACCGCCGCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAGCGGCGCGGACTCTAGATCATAATCAGCC
 3XP3-EYFP MARKER >

FIG. 12(B) CONT.

8100 ATACCACATTTGTAGAGGTTTACTTGCTTTAAAAAACCTCCACACCTCCCCCTGAACCTGAAACATAAAATGAATGCAATTGTTGTTAACTTGTT
3XP3-EYFP MARKER >
8200 TATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTTCACAAATAAAGCATTTTTTTTCACTGCAATCTAGTTGTGGTTGTCCAAACTC
3XP3-EYFP MARKER >
8300 ATCAATGTATCTTAAAGCTTATCGATACGGCTACGGCACTAGTGGATCCCATGCGTCAATTTTACGCATGATTATCTTTAACGTACGTACACAATATGATT
< LEFT TERMINAL REPEAT >
3XP3-EYFP MARKER >
8400 ATCTTTCTAGGGTTAATCTAGCTGCGTGTTCTGCAGCGGTGTCGAGCATCTTTCATCTGCTCCATCAGCGTGTAAACACATTTGCACCGCGGAGTCTGCCCG
<
8500 TCCTCCACGGGTTCAAAAACGTGAATGAACGAGCGCGCGCGCGGGTAACCTACGGGGTATCCATGTCCATTTCTGCGGCATCCAGCCAGGATAACCCGT
8600 CCTCGCTGACGTAATATCCCAGCGCGCACCGCTGTCAATTAATCTGCACACCGGCACGGCAGTTCCGGCTGTCCGGGTATTGTTCCGGGTGCTGATGCG
8700 CTTCCGGGTGACCATCCGGAACTGTGTCCGGAAAGCCCGACGAACTGGTATCCCAGGTGGCCTGAACGAAACAGTTACCCGTTAAAGGCGTGCATGGCC
8800 ACACCTTCCCGAATCATATGGTAAACGTGCGTTTTCGCTCAACGTCAATGCAGCAGCAGTCACTCCTCGGCAAACTCTTTCCATGCCGCTTCAACCTCGC
8900 GGGAAAAGCACGGGCTTCTTCCCTCCCCGATGCCCCAGATAGCGCCAGCTTGGGGCATGACTGAGCCGGGAAAAAGACCCGACGATATGATCCTGATGCAG
CTAGATTAAACCCTAGAAAGATAGTCTGCGGTAAAAATTGACGCATGGGATCCCCCGGGCTGCAGGAATTCGATATCAAGCTTATCGATACCGTCGAAGCTT
< RIGHT TERMINAL REPEAT >
-- (SEQ ID NO:48) --

FIG. 12(B) CONT.

p (PZ) -Bac-ECFP

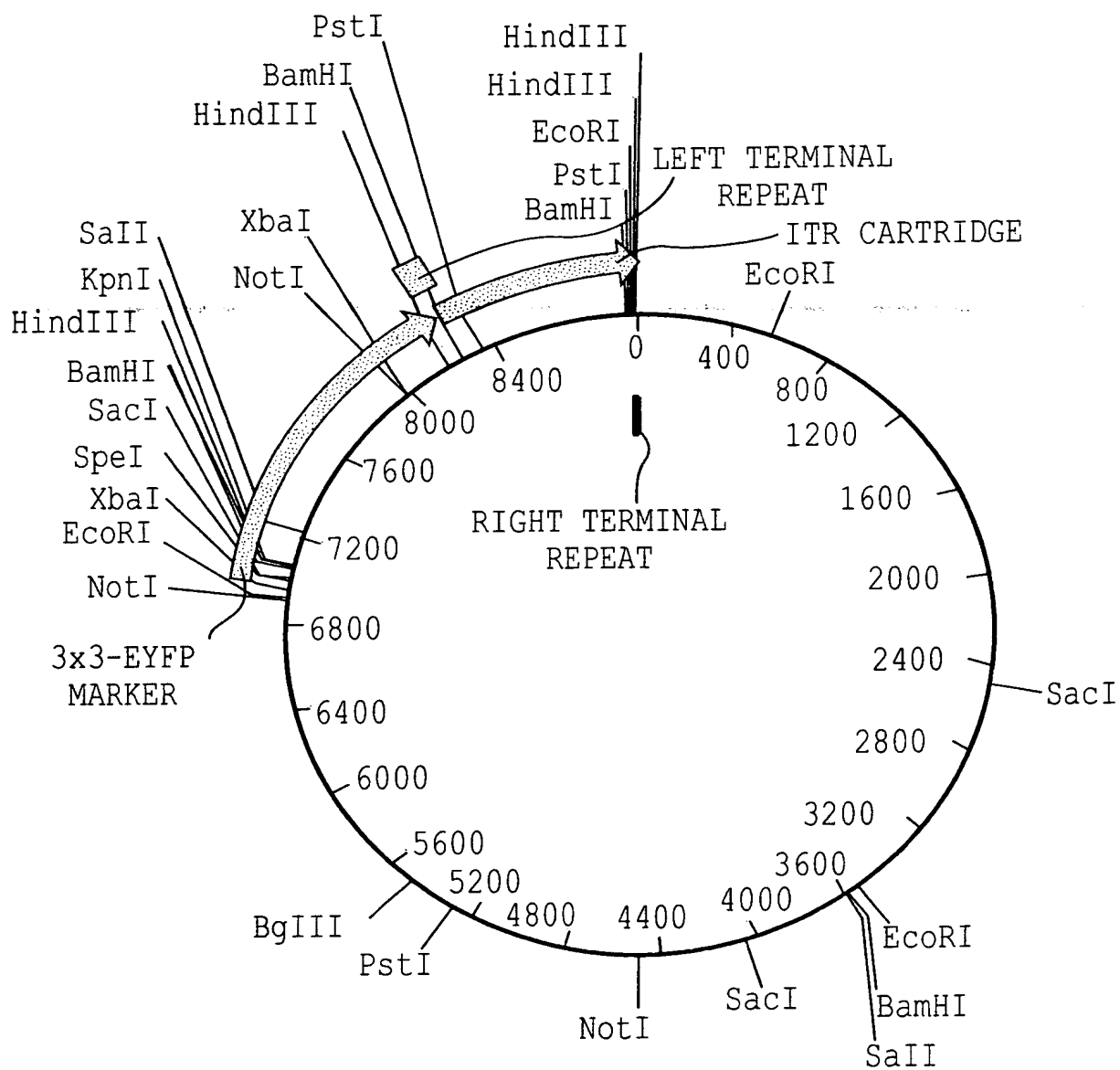


FIG. 13A

p(PZ)-Bac-ECFP
Sequence Range: 1 to 9012

100
ACCGAAGTATACACTTAAATTTCAGTGCACGTTTGCTTGTTGACAGGAAAGGTTGTGTCCGGACGAATTTTTTTTGAACAACTTAACCCCTTACGTGAAT

200
AAAAAAAATGAAATATTGCAAAATTTTGCTGCAAAAGCTGTGACTGGAGTAAATTAATTACAGTCCGAAGTGTGCTATTAAAGAGAAAATTTGGGAGCA

300
GAGCCTTGGGTCCAGCCTTGGTGAAAACCTCCCAAAATTTGTGATACCCACTTTAATGATTCCGAGTGAAGGCTGCACCTGCAAAAAGGTCAGACATTTTAAA

400
AGGAGGGGACTCAACGCAGATGCCCGTACCTAGTAAGTATAGAGCCTGAACCAGAAAAGATAAAAGAAAGGCTATACCAGTGGGAGTACACAAAACAGAGT

500
AAGTTTGAATAGTAAAAAAATCAATTTATGTAAACAATAACGTGACTGTGCGTTAGGTCCTGTTCAATTGTTAATGAAAAATAAGAGCTTGAGGGAAAAAA

600
TTCGGTACTTTGGAGTACGAAATGCCGTGCTTTAGAGCAGCAGCCGAAATTCACCTGGCCGTCGTTTACACGTCGTGACTGGGAAAACCCCTGGCGTTACCCA

700
ACTTAATCGCCTTGCAGCACATCCCCCTTTTCGCCAGCTGGCGTAATAGCGAAGAGGCCCGCACCGATCGCCCTTCCCAACAGTTGCGCAGCCTGAAATGGC

800
GAATGGCGCTTTGCCCTGGTTTCCGGCACCAAGAGCGGTGCCGGAAGCTGGCTGGAGTCCGATCTTCCCTGAGGCCGATACTGTCTCGTCCCCCTCAAACCT

900
GGCAGATGCACGGTTACGATGCGCCCATCTACACCAACGTAACCTATCCCATTACGGTCAATCCGCCGTTTGTTCGCCACGGAGAAATCCGACGGGTGTGTTA

1000
CTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACGGCAATTATTTTGTATGGCGTTAACTCGGCCGTTTCATCTGTGTGGTGCAACGGG

1100
CGCTGGGTCCGTTACGGCCAGGACAGTCGTTTGCCCGTCTGAATTTGACCTGAGCGCATTTTACGCGCCGAGAGAAAACCGCCTTCGCGGTGATGGTGCTGCTC

FIG. 13(B)

1200 GTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCAG
1300 CGATTTCCATGTTGCCACTCGCTTTAATGATGATTTCAGCCCGCGCTGTACTGGAGGCTGAAGTTACAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTA
1400 ACAGTTTCTTTATGGCAGGGTGAAACGCAGGTCGCCACGGCACCGCGCCCTTTCGGCGGTGAAATTATCGATGAGCGTGGTGGTTATGCCGATCGCGTCA
1500 CACTACGCTGAACGTCGAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTCCGTGGTTGAAC TGACACACCGCCGACGGCACGCTGAT
1600 TGAAGCAGAAGCCTGCGATGTCGGTTTCCGCGAGGTGCGGATTGAAAAATGGTCTGCTGCTGCTGAACGGCAAGCCGTTGCTGATTCGAGGCGTTAACCGT
1700 CACGAGCATCATCCTCTGCATGGTCAGGTCATGGATGAGCAGACGATGGTGCAGGATATCCTGCTGATGAAGCAGAACAATTTAACGCCGTGCGCTGTT
1800 CGCATTATCCGAACCATCCGCTGTGGTACACGCTGTGGACCGCTACGGCCCTGTATGTGGTGATGAAGCCAATATTGAAACCCACGGCATGGTGCCAAT
1900 GAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGCATGAGCGAACCGGTACCGGAATGGTGCAGCGCGATCGTAATCACCCGAGTGTGATCATCTGG
2000 TCGCTGGGGAATGAATCAGGCCACGGCGCTAATCACGACGCGCTGTATCGCTGGATCAAAATCTGTGATCCCTTCCCGCCCGGTGCAGTATGAAGGCGGCG
2100 GAGCCGACACCGGCCACCGATATTATTGCCCGATGTACGCGCGCGGTGGATGAAGACACGCCCTTCCCGGCTGTGCCGAAAATGGTCCATCAAAAAATG
2200 GCTTTCGCTACCTGGAGAGACGCGCCCGCTGATCCTTTGCCAATACGCCCCACCGCATGGGTAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTTT
2300 CGTCAGTATCCCCGTTTACAGGGCGGCTTCGCTCTGGGACTGGGTGGATCAGTCGCTGATTAAATATGATGAAAACGGCAACCCGTGGTCCGCTTACGGCG

FIG. 13(B) CONT.

2400 GTGATTTTGGCGATACGCCGAACGATCGCCAGTTCTGTATGAAGGTCTGGTCTTTGCCGACCGCACGCCGATCCAGCGCTGACGGAAGCAAAACACCA
2500 GCAGCAGTTTTCACAGTTCGTTTATCCGGGCAACCATCGAAGTGACCAAGCAATACCTGTTCCGTATAGCGATAACGAGCTCCTGCACTGGATGGTG
2600 GCGCTGGATGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTCGCTCCACAAGTTAAACAGTTGATTGAACTGCCTGAAC TACCGCAGCCGGGAGA
2700 GCGCCGGGCAACTCTGGCTCACAGTACGCGTAGTGCAACCGAACGCGACCGCATGGTCAGAAAGCCGGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGC
2800 GGAAACCTCAGTGTGACGCTCCCCGGCGCGTCCCACGCCATCCCGCATCTGACCACCAGCAAAATGGATTTTTCATCGAGCTGGGTAATAAGCGTTGG
2900 CAATTAAACCGCCAGTCAGGCTTTCCTTTCACAGATGTGGATTGGCGATAAAAAACAAC TACTGTCAGCCCGCTGCGCGATCAGTTACCCGTGACCCGCTGG
3000 ATAACGACATTGGCGTAAGTGAAGCAGCCCGCATTGACCCCTAACGCCCTGGGTGGAACGCTGGAAGCGCGGGCCATTACCAGGCCGAAGCAGCGTTGTT
3100 GCAGTGCACGGCAGATACACTTGCTGATGCGGTGCTGATTACGACCGCTCACGCGTGGCAGCATCAGGGGAAAACCTTATTTATCAGCCGGAAAACCTAC
3200 CGGATTGATGGTAGTCAAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACACCGCATCCGGCGCGGATTGGCCCTGAAC TGCCAGCTGGCGC
3300 AGGTAGCAGAGCGGTAAACTGGCTCGGATTAGGGCCGCAAGAAAATA TCCCGACCGCCTTACTGCCGCCCTGTTTTCACCGCTGGGATCTGCCATTGTC
3400 AGACATGTATACCCCGTACGTCTTCCCGAGCGAAAACGGTCTGCGCTGCGGACGCGCGGAATTGAATTATGCCCCACACCACTGGCGGCGGACTTCCAG
3500 TTCAACATCAGCCGCTACAGTCAACAGCAACTGATGGAAACCAGCCATCGCCATCTGTCACGCGGAAGGACACATGGCTGAATATCGACGGTTTCC

FIG. 13(B) CONT.

3600
ATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGGGCGGAATCCAGCTGAGCGCCGTCCTACCATTACCAGTTGGTCTGGTGTCTGGGG
3700
ATCCGTCGACTAAGGCCAAAGAGTCTAATTTTGTTCATCAATGGGTATAACATAATGGGTATATATAAGTTTGTTTAAGTTTTTGAGACTGATAAG
3800
AATGTTTCGATCGAATATCCATAGAACAAACAATAGTATTACCTAATTACCAAGTCTTAATTTAGCAAAAATGTTATTGCTTATAGAAAAATAAATTAT
3900
TTATTTGAAATTTAAAGTCAACTGTCTCATTTAATGTCTTGTAGACTTTTGAAAGTCTTACGATACAATTAGTATCTAATATACATGGGTTCATTCTACAT
4000
TCTATATTAGTGATGATTTCTTTAGCTAGTAATACATTTTAATTAATTTCGGCTTTTGATGATTTTCTGATTTTTTCCGAACGGATTTTCGTAGACCCCTTT
4100
CGATCTCATAAATGGCTCATTTTATTGCGATGGACGGTCAGGAGAGCTCCACTTTTGAATTTCTGTTCGAGACACCGCATTTGTAGCACATAGCCGGGAC
4200
ATCCGGTTTGGGGAGATTTCCAGTCTCTGTGCAATTGGTTTTCGGGAATGCGTTGCAGGCGCATACGCTCTATATCCTCCGAACGGCGCTGGTTGACC
4300
CTAGCATTTACATAAGGATCAGCAGCAAAATTTGCCCTCTGCTTCATTGCCCGGAATCACAGCAATCAGATGTCCCTTTCCGGTTACGATGGATATTCAGGT
4400
GCGAACCGCACACAAAGCTCTCGCCGCACACTCCACACTGATATGGTCGCTCGCCCTGTGGCGCCGCATATGGATCTTAAGGTCGTTGGACTGCACAAAG
4500
CTCTTGCTGCACATTTTGCAGGAGTACGGCCTTTGACCCGTGTGCAATCGCATGTGTGCGCGCCAGCTTGTTCTCGGAAATAAACTTCTTGGAGCAGATGC
4600
GGCCGCCCGGGTGGCGGAAGAACTCCAGCATGAGATCCCCCGCGCTGGAGGATCATCCAGCCGGCTCCCCGAAAAACGATTCCGAAGCCCCAACCTTTTCAT
4700
AGAAGCGCGGTGGAATCGAAATCTCGTGATGGCAGGTTGGCGGTGCGCTTGGTCGGTCATTTTCGAACCCCGAGAGTCCCCGCTCAGAAGAACTCGTCAAGA

FIG. 13(B) CONT.

4800 AGCCGATAGAAAGCGGATGCGCTGCGAATCGGGAGCGGCGATACCGTAAAGCACGAGGAAGCGGTGAGCCCATTCGCCGCCAAGCTCTTCAGCAATATCAC
4900 GGTAGCCAAACGCTATGTCTGATAGCGGTCCGCCACACCCAGCCGGCCACAGTCGATGAATCCAGAAAGCGGCCATTTTCCACCATGATATTCGGCAA
5000 GCAGGCATCGCCATGGGTCACGACGAGATCCTCGCCGTGCGGATGCGGCCCTTGAGCCTGGCGAACAGTTGCGGTGGCGGAGCCCCCTGATGCTCTTCG
5100 TCCAGATCATCCTGATCGACAAAGACCGGCTTCCATCCGAGTACGTGCTCGCTCGATGCGATGTTTCGCTTGGTGGTCGAAATGGGCAGGTAGCCGGATCAA
5200 GCGTATGCAGCCGCCGCATTGCATCAGCCATGATGGATACTTTCTCGGCAGGAGCAAGGTGAGATGACAGGAGATCCTGCCCGGCAC TTCGCCCAATAG
5300 CAGCCAGTCCCTTCCCGCTTCAGTGACAACGTCGAGCACAGCTGCGCAAGGAACGCCCGTCGTGGCCAGCACGATAGCCGCGCTGCCTCGTCCCTGCAGT
5400 TCATTGAGGGCACCGACAGGTCGGTCTTGACAAAAAGAACCGGGGCCCCCTGCGCTGACAGCCGGAACACGGCGGCATCAGAGCAGCCGATTGTCTGT
5500 GTGCCCAGTCATAGCCGAATAGCCTCTCCACCCAGCGGCGCGAGAACCTGCGTGCAATCCATCTTGTTCATCATGCGAAACGATCCTCATCTCTCTC
5600 TTGATCAGATCTTGATCCCCCTGCGCCATCAGATCCTTGGCGGCAAGAAAGCCATCCAGTTACTTTGCAGGGCTTCCCAACCTTACCAGAGGGCGCCCCA
5700 GCTGGCAATTCCGGTTCCGCTTGCTGTCCATAAAACCGCCCCAGTCTAGCTATCGCCCATGTAGCCCCACTGCAAGCTACCTGCTTCTCTTTGCGCTTGCGT
5800 TTTCCCTTGTCACAGATAGCCCAGTAGCTGACATTATCCGGGGTCAGCACCGTTTCTCGGACTGGCTTCTACGTGTTCCGCTTCCCTTTAGCAGCCCCCT
5900 GCGCCCTGAGTGCTTGCGGCAGCGTGAAGCTAATTCAATGGTTATAAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCAAAATCC

FIG. 13(B) CONT.

6000 CTTATAAATCAAAGAATAGCCCGAGATAGGGTTGAGTGTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCG
 6100 AAAACCGTCTATCAGGGCGATGGCCGGATCAGCTTATGCGGTGTGAATACCGCACAGATGCGTAAGGAGAAAATACCGCATCAGGGCTCTTCCGCTT
 6200 CCTCGCTCACTGACTCGCTCGGCTCGGTTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATACGGTTATCCACAGAAATCAGGGGATAA
 6300 CGCAGGAAAGACATGTGAGCAAAGGCCAGCAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCTGACGAG
 6400 CATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTTGGAAAGCTCCCTCGTGGCGCTCTCCTG
 6500 TTCCGACCCCTGCGGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCATCATAGCTCACGCTGTAGGTATCTCAGTTCCGGTGTA
 6600 GGTGCTCGCTCCAAGCTGGGCTGTGTGCAGAACCCCCCGTTCAGCCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAAACCCGGTAAGA
 6700 CACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACG
 6800 GCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAACCCACCGC
 6900 TGGTAGCGCGGTTTTTTTGTGCAAGCAGCAGATTACGGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTCTTACTGAACGGTGATCCCCCA
 7000 CCGGAATTGCGGCGCGGGAATTCTCATGTTTGACAGCTTATCATCGATAAGCTGGCCGCTCTAGAACTAGTGTTCCCACAATGGTTAATTCGAGCTCGCC
 3XP3-EYFP MARKER >
 7100 CGGGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAATTCAATTAGGATCCAAGCTTATCGATTTCGAACCCCTCGACCGCGGAGTATAAATAGA
 3XP3-EYFP MARKER >

FIG. 13(B) CONT.

7200
 GCGCCTTCGTCTACGGAGCGACAATTCAATTCAAACAAGCAAAAGTGAACACGTCGCTAAGCGAAAGCTAAGCAAATAACAAGCGCAGCTGAACAAGCTA
 3XP3-EYFP MARKER >

7300
 AACAAATCGGGGTACCGCTAGAGTCGACGGTACGATCCACCGCTCGCCACCATGCTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTCCCCATCCTGGT
 3XP3-EYFP MARKER >

7400
 CGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCCTGAAGTTCATCTGCACC
 3XP3-EYFP MARKER >

7500
 ACCGGCAAGCTGCCCCGTGCCCTGGCCCCACCCCTCGTGACCAACCCTGACCTGGGGCGTGCAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCAGCACT
 3XP3-EYFP MARKER >

7600
 TCTTCAAGTCCGCCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTCAAGGACGACGGCAACTACAAGACCCCGCGGAGGTGAAGTTCGAGGG
 3XP3-EYFP MARKER >

7700
 CGACACCCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAAGCTGGAGTACAACCTACATCAGCCACAAC
 3XP3-EYFP MARKER >

7800
 GTCTATATCACCGCCGACAAGCAGAAGAACGGCATCAAGGCCAACTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACC
 3XP3-EYFP MARKER >

7900
 AGCAGAACACCCCCATCGGGGACGGCCCCGTGCTGTGCCCGGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCCAACGAGAAGCGCGGA
 3XP3-EYFP MARKER >

8000
 TCACATGGTCTGCTGGAGTTCGTGACCGCCCGCGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAAGCGCGCGGCACTCTAGATCATATAATCAGCC
 3XP3-EYFP MARKER >

FIG. 13(B) CONT.

```

8100 ATACCACATTGTAGAGTTTACTTGCTTTAAAAAACCTCCACACACCTCCCCCTGAACCTGAAACATAAAATGAATGCAATTGTTGTTAACTTGT
      3XP3-EYFP MARKER >
8200 TATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCATTTTTTTTCACTGCATTCTAGTTGTGTTGTCCAAACTC
      3XP3-EYFP MARKER >
8300 ATCAATGTATCTTAAAGCTTATCGATACGGCGTACGGCGCGCTAGCGCGCGGCGGATGGATCCCATCGGTCAATTTTACGCATGATTATCTTTAACGTACG
      3XP3-EYFP MARKER < LEFT TERMINAL REPEAT >
8400 TCACAAATATGATTATCTTTCTAGGGTTAATCTAGCTGCGTGTCTGCAGCGTGTGAGCATCTTTCATCTGCTCCATCAGCTGTAAACACACATTTCACCC
      < LEFT TERMINAL REPEAT >
8500 GCGAGTCTGCCCGTCCCTCCACGGGTTCAAAACGTGAATGAACGAGGCGCGCGCGGGTAACTACGGGGTATCCATGTCCATTTCTCGGGCATCCAG
      3XP3-EYFP MARKER >
8600 CCAGGATACCCGTCCTCGCTGACGTAATATCCAGCGCGCACCGCTGTCAATTAATCTGCACACCGGCACGGCAGTTCGGGCTGTCCGGCGGTATTGTTTCG
      3XP3-EYFP MARKER >
8700 GGTTCGTGATGCGCTTCGGGCTGACCATCCGGAACGTGTGTCCGGAAAAAGCCCGACGAACTGGTATCCCAGGTGGCCTGAACGAACAGTTCACCGTTAA
      3XP3-EYFP MARKER >
8800 GGCGTGCAATGGCCACACCTTCCCGAATCATATGGTAACGTGCGTTCCTCGCTCAACGTCAATGCAGCAGCATCTCCTCGGCAAACTCTTCCATGCC
      3XP3-EYFP MARKER >
8900 GCTTCAACCTCGCGGGAAGGCACGGGCTTCTTCCTCCCCGATGCCCAGATAGCCGAGCTTGGCGGATGACTGAGCCGGAAAAAGACCCGACGATAT
      3XP3-EYFP MARKER >
9000 GATCCTGATGCAGCTAGATTAAACCCTAGAAAGATAGTCTGCGTAAATTAACGCATGGGATCCCCCGGGCTGCAGGAATTCGATATCAAGCTTATCGATA
      < RIGHT TERMINAL REPEAT >
      CCGTCGAAGCTT -- (SEQ ID NO:49) --

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FIG. 13(B) CONT.

P(PZ)-bac-EGFP

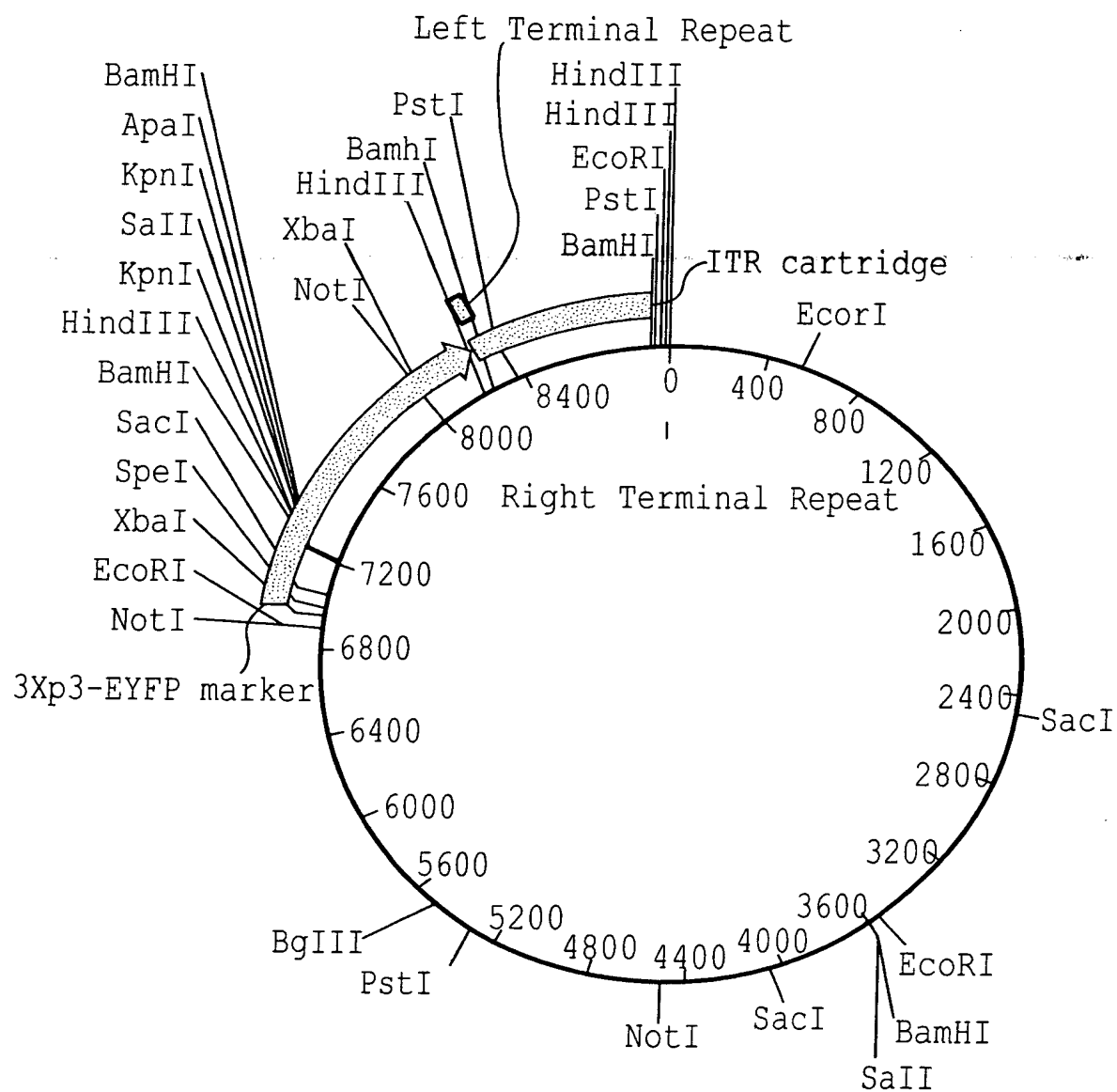


FIG. 14A

P(PZ) -Bac-EGFP

Sequence Range: 1 to 9013

```
100 ACCGAAGTATACACTTAAATTACAGTGCACGTTTGCTTGAGAGGAAAGGTTGTGTGGGACGAATTTTTTTTGAACATTAAACCTTACGTGGAAT
200 AAAAAAATGAAATATTGCAAAATTTGCTGCAAAAGCTGTGACTGGAGTAAAAATTAATTCACGTGCCGAAGTGTGCTATTAAAGAGAAAAATTGTGGGAGCA
300 GAGCCTGGGTGCAGCCTTGGTGAAAAACTCCCAAATTTGTGATACCCACTTTAATGATTCGCAGTGGAAAGGCTGCACCTGCAAAAGGTCAGACATTAAAT
400 AGGAGGGACTCAACGCAGATGCCGTACCTAGTAAAGTGATAGAGCCTGAACCCAGAAAAAGATAAAGAGGCTATACCAGTGGGAGTACACAAACAGAGT
500 AAGTTTGAATAGTAAAAAAATCATTTATGTAAACAATAACGTGACTGTGCGTTAGGTCCCTGTTTCATTTTAATGAAAAATAAGAGCTTGAGGGAAAAAA
600 TTCGTACTTTGGAGTACGAAATGCGTCGTTTAGAGCAGCAGCCGGAATTCACCTGGCCGTCGTTTACAACGTCGTGACTGGGAAAAACCCCTGGCGTTACCCA
700 ACTTAATCGCCTTGCAGCACATCCCCCTTTCGCCAGCTGGCGTAATAGCGAAGAGCCCGCACCGATCGCCCTTCCCCAACAGTTGCCGAGCCTGAATGGC
800 GAATGGCGCTTTGCCCTGGTTTCCGGCACCAAGAGCGGTGCCGGAAGCTGGCTGGAGTGGCATCTTCCTGAGGCCGATACTGTCTGTCCTCCCTCAAAC
900 GGCAGATGCACGGTTACGATGCGCCCATCTACACCAACGTAACCTATCCCATTACGGTCAATCCGCCGTTTGTTCACCGGAGAAATCCGACGGGTTGTTA
1000 CTCGCTCACATTTAATGTTGATGAAAGCTGGCTACAGGAAGGCCAGACCGCAATTATTTTGTATGGCGTTAACTCGGCGTTTCATCTGTGGTGCAACGGG
1100 CGCTGGGTGCGTTACGGCCAGGACAGTCGTTTGCCGTCCTGAATTTGACCTGAGCGCATTTTACGCGCCGGAGAAAAACCGCCCTCGCGGTGATGCTGCTGC
```

FIG. 14(B)

1200 GTTGGAGTGACGGCAGTTATCTGGAAGATCAGGATATGTGGCGGATGAGCGCATTTTCCGTGACGTCTCGTTGCTGCATAAACCGACTACACAAATCAG
1300 CGATTTCCATGTTGCCACTCGCTTTAATGATGATTTACGCCCGCTGTACTGGAGGCTGAAGTTCAGATGTGCGGCGAGTTGCGTGACTACCTACGGGTA
1400 ACAGTTTCTTTATGGCAGGTGAAACGCAGGTGCGCCAGCGGACCCGCCCTTTCGGCGGTGAAATTATCGATGAGCGTGGTGGTTATGCCGATCGCGGTCA
1500 CACTACGCTGAACGTCGAAAACCCGAAACTGTGGAGCGCCGAAATCCCGAATCTCTATCGTGGGTGGTTGAAC TGACACCCGCCGACGGCACGCTGAT
1600 TGAAGCAGAAGCCTCGCATGTCGGTTTCCGCGAGGTGCGGATTGAAAAATGGTCTGCTGCTGAACGGCAAGCCGTGCTGATTCGAGGGCGTTAACCGT
1700 CACGAGCATCATCCTCTGCATGGTCAGGTCATGGATGAGCAGACCGATGGTGCAGGATATCCTGCTGATGAAGCAGAACACTTTAACGCCGTGCGGTGTT
1800 CGCATATCCGAACCATCCGCTGTGGTACACGCTGTGGCACCGCTACGGCCTGTATGTGGTGATGAAGCCCAATATTGAAACCCACGGCATGGTGCCAAT
1900 GAATCGTCTGACCGATGATCCGCGCTGGCTACCGCGATGAGCGAACGCGTAACGCGAATGGTGCAGCGCGATCGTAATCACCCGAGTGTGATCACTGG
2000 TCGCTGGGGAATGAATCAGGCCACGGCGCTAATCACGACGCGCTGTATCGCTGGATCAAAATCTGTGATCCTTCCCGCCCGGTGCAGTATGAAGCGGCG
2100 GAGCCGACACCACGGCCACCGATATTATTGCCCGATGTACGCGCGCGTGATGAAGACCAGCCCCTTCCCGCTGTGCCGAAATGGTCCATCAAAAAATG
2200 GCTTTCGCTACCTGGAGACGCGCCCGCTGATCCTTTGCCAATACGCCCCACCGGATGGGTAAACAGTCTTGGCGGTTTCGCTAAATACTGGCAGGCGTTT
2300 CGTCAGTATCCCCGTTTACAGGGCGGCTTCGCTCTGGGACTGGGTGGATCAGTCGCTGATTAAATATGATGAAAAACGGCAACCCGTGGTCGGCTTACGGCG

FIG. 14(B) CONT.

2400 GTGATTTGGCGATACGCCGAACGATCGCCAGTTCTGTATGAACGGTCTGGTCTTTGCCGACCGCACGCCGCTCCAGCGCTGACGGAAACAAACACCA
2500 GCAGCAGTTTTCAGTTCCGTTTATCCGGGCAACCATCGAAGTGACCAGCGAATACCTGTTCCGTATAGCGATAACGAGCTCCTGCACCTGGATGGTG
2600 GCGCTGGATGGTAAGCCGCTGGCAAGCGGTGAAGTGCCTCTGGATGTCGCTCCACAAGTAAACAGTTGATTGAACTGCCCTGAACACTACCGCAGCCGGAGA
2700 GCGCCGGCAACTCTGGCTCACAGTACCGGTAGTGCAACCGAACCGACCGCATGGTCAAGAGCCGGCACATCAGCGCCTGGCAGCAGTGGCGTCTGGC
2800 GGAAACCTCAGTGTGACGCTCCCCGCCGCTCCACGCCATCCCGCATCTGACCACCAGCGAAATGGATTTTGCATCGAGCTGGGTAATAAGCGTTGG
2900 CAATTTAACCGCCAGTCAGGCTTCTTTACAGATGTGGATTGGCGATAAAAAACAACCTGCTGACGCCGCTGCGCGATCAGTTTACCCGTGCACCGCTGG
3000 ATAACGACATTGGCGTAAGTAAGCAGCCCGCATTGACCCCTAACGCCCTGGGTGGAACGCTGGAAGCGCGGGGCCATTACCAGGCCGAAGCAGCGTTGTT
3100 GCAGTGCACGGCAGATACACTTGCTGATGCGGTGCTGATTACGACCGCTCAGCGTGGCAGCATCAGGGGAAACCTTATTATCAGCCGGAAACCTAC
3200 CCGATTGATGGTAGTGGTCAATGGCGATTACCGTTGATGTTGAAGTGGCGAGCGATACCCGCATCCGGCGCGGATTGGCCTGAACCTGCCAGCTGGCCG
3300 AGGTAGCAGAGCGGGTAAACTGGCTCGGATTAGGGCCGCAAGAAACTATCCCAGCCGCTTACTGCCCGCTGTTTTCACCGCTGGGATCTGCCATTGTC
3400 AGACATGTATACCCCGTACGTCTTCCCGAGCGAAACGGTCTGCGCTGCGGGACGGCGGAATTGAATTATGGCCCAACACAGTGGCGCGGACTTCCAG
3500 TTCAACATCAGCCGCTACAGTCAACAGCAACTGATGGAAACCAAGCCATCGCCATCTGCTGCACGCGGAAGAGGCACATGGCTGAATATCGACGGTTTCC

FIG. 14(B) CONT.

3600 ATATGGGGATTGGTGGCGACGACTCCTGGAGCCCGTCAGTATCGGCGGAATTCAGCTGAGCGCCGGTCGCTACCATACCAGTTGGTCTGGTCTCGGGG
3700 ATCCGTCGACTAAGGCCAAAGAGTCTAAATTTTGTTCATCAATGGGTTATAACATATGGGTTATATTATAAGTTTGTTTTAAGTTTTTGAGACTGATAAG
3800 AATGTTTCGATCGAATATCCATAGAACAAATAGTATTACCTAATTACCAAGTCTTAATTTAGCAAAAAATGTTATTGCTTATAGAAAAATAAATTAT
3900 TTATTTGAAATTTAAAGTCAACTTGTCATTAAATGTCITGTAGACTTTTGAAAGTCTTACGATACAATTAGTATCTAATATACATGGGTTCAATCTACAT
4000 TCTATATTAGTGATGATTTCTTTAGCTAGTAATACATTTTAATATATATTCGGCTTTTGATGATTTTCTCGATTTTTCGGAACGGATTTTTCGTAGACCCCTTT
4100 CGATCTCATAAATGGCTCATTTTATTGGCATGGACGGTCAGGAGAGCTCCACTTTTGAATTTCTGTTCCGACACACCGCATTTGTAGCACATAGCCGGGAC
4200 ATCCGGTTGGGGAGATTTTCCAGTCTGTGCAATTGGTTTTTCGGGAATGCGTTGCAGGGCGCATACGCTCTATACTCCGAACGGCGCTGGTTGACC
4300 CTAGCATTTACATAAGGATCAGCAGCAAAATTTGCCTCTGCTTCATTGCCCGGAATCACAGCAATCAGATGTCCCTTTCGGTTACGATGGATATTACAGT
4400 GCGAACCGCACACAAAGCTCTCGCCGCACACTCCACACTGATATGGTCGCTCGCCCTGTGGCGCCGCATATGGATCTTAAGGTCGTTGGACTGCACAAAG
4500 CTCTTGCTGCACATTTTGCAGGAGTACGGCCTTTGACCCGTGTGCAATCGCATGTGTCCGCCCAGCTTGTTCTGCGAAATAAACTTCTTGGAGCAGATGC
4600 GGCCGCCCCGGGTGGGGGAAGAACTCCAGCATGAGATCCCCCGGCTGGAGGATCATCCAGCCGGCTCCCGAAACGATTCCGAAGCCCCAACCTTTTCAT
4700 AGAAGCGGCGGTGGAATCGAAATCTCGTGATGGCAGGTTGGCGCTCGCTTGGTCCGTCAATTTCGAACCCAGAGTCCCGCTCAGAAGAACTCGTCAAGA
4800 AGCGATAGAAGCGGATGCGCTGCCAATCGGGAGCGGGGATACCGTAAAGCACGAGGAAGGGTCAGCCCATTCGCCGCCAAGCTCTTCAGCAATATCAC

FIG. 14(B) CONT.

4900 GGGTAGCCAAACGCTATGTCCCTGATAGCGGTCCGCCACACCCAGCCGGCCACAGTCGATGAATCCAGAAAGGGCCATTTCACCATGATATTGGGCAA
5000 GCAGGCATCGCCATGGGTACGACGAGAGATCCCTGCCCGTCCGGCATCGCGCCTTGAGCCTGGGAACAGTTCGGCTGGCGGAGCCCCTGATGCTCTTCG
5100 TCCAGATCATCTGATCGACAAGACCGGCTTCCATCCGAGTACGTGCTCGCTCGATGCGATGTTTCGCTTGGTGGTCGAATGGGCAGGTAGCCGGATCAA
5200 GCGTATGCAGCGCCGCATTGCATCAGCCATGATGGATACTTCTCGGCAGGAGCAAGGTGAGATGACAGGAGATCCTGCCCCCGGCACTTCGCCCAATAG
5300 CAGCCAGTCCCCTTCCCCGCTTCAGTGACAACGTCGAGCACAGCTGGCAAGGAACGCCCGTCGTGCCCAGCCACGATAGCCCGGCTGCCCTCGTCCCTGCAGT
5400 TCATTACGGGCACCGGACAGGTCGGTCTTGACAAAAGAACCGGGCGCCCCCTCGCTGACAGCCGGAACACGGGGCATCAGAGCAGCCGATTGTCTGTT
5500 GTGCCCAGTCATAGCCGAATAGCCTCTCCACCCAAAGCGCCGGAGAACCTGCGTGCAATCCATCTTGTTCATCATCGGAAACGATCCTCATCCTGTCTC
5600 TTGATCAGATCTTGATCCCCCTGGCCCATCAGATCCCTTGGCGGCAAGAAAGCCATCCAGTTTACTTTGCAGGGCTTCCCAACCTTACCAGAGGGCGCCCCA
5700 GCTGGCAATTCCGGTTCCGCTTGCTGTCCATAAAACCGCCAGTCTAGCTATCGCCATGTAAAGCCCACTGCAAGCTACCTGCTTTCTCTTGGGCTTGCGT
5800 TTTCCCTTGTCAGATAGCCCAGTAGCTGACATTATCCGGGTACGACCCGTTCTGCGGACTGGCTTCTACGTGTTCGGCTTCCTTTAGCAGCCCCTT
5900 GCGCCCTGAGTGTTCGGCAGCGTGAAGCTAATTTCATGGTTATAAATTTTGTAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGGCAAAATCC
6000 CTTATAAATCAAAGAATAGCCCAGATAGGGTTGAGTGTGTTCCAGTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCG
6100 AAAACCGTCTATCAGGGCGATGGCCGGATCAGCTTATGCGGTGTGAAATACCCGACAGATGCGTAAGGAGAAATACCGCATCAGGGCTCTTCCGCTT

FIG. 14(B) CONT.

6200 CCTCGCTCACTCGCTCGGCTCGGTCGTTCCGGTGCAGGCGGTATCAGCTCACTCAAAGGCGGTAAACGGTTATCCACAGAAATCAGGGGATAA
6300 CGCAGGAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTGTCTGGCGTTTTCATAGGCTCCGCCCCCTGACGAG
6400 CATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGGGCTCTCCTG
6500 TTCCGACCCCTGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCAGGCTGTAGGTATCTCAGTTCCGGTGTA
6600 GGTGCTCGCTCCAAGCTGGGCTGTGTGACGAACCCCCCGTTACGCCCGACCGTGGCGCTTATCCGGTAACTATCGTCTTGAGTCCAAACCCGGTAAGA
6700 CACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACG
6800 GCTACACTAGAAGGACAGTATTGGTATCTGGGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAAACAACCCACCGC
6900 TGGTAGCGCGGTTTTTGTGCAAGCAGCAGATTACGGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTTACTGAACGGTGATCCCCCA
7000 CCGGAATTGCGGCCGCGGAATTCTCATGTTTGACAGCTTATCATCGATAAGCTGGCCGCTCTAGAACTAGTGTCCCACAAATGGTTAATTCGAGCTCGCC
3XP3-EYFP MARKER
7100 CGGGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAATTCAATTAGGATCCCAAGCTTATCGATTTCGAACCCCTCGACCCCGGAGTATAAATAGA
3XP3-EYFP MARKER
7200 GCGGCTTCGTCTACGGAGCGACAATTCAATTCAAACAAGCAAAAGTGAACACGCTCGCTAAGCGAAAGCTAAGCAAATAACAAGCGCAGCTGAACAAGCTA
3XP3-EYFP MARKER

FIG. 14(B) CONT.

7300
 ACAAATCGGGGTACCGCTAGAGTCGACGGTACCGCGGGCCCCGGGATCCACCGGTCCGCCACCATGGTGAGCAAGGCGGAGGAGCTGTTACCGGGGTGGTG
 3XP3-EYFP MARKER >

7400
 CCCATCCTGTGTCGAGCTGGACGGCGACGTAAACGGCCACAAAGTTCAAGCGTGTCCGGCGAGGCGGCGATGCCACCTACGGCAAGCTGACCCCTGAAGT
 3XP3-EYFP MARKER >

7500
 TCATCTGCACCAACCGGCAAGCTGCCCCGTGCCCTGGCCCCACCCCTCGTGACCACCCCTGACCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCACATGAA
 3XP3-EYFP MARKER >

7600
 GCAGCAGCACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCCGCGGAGGTG
 3XP3-EYFP MARKER >

7700
 AAGTTCGAGGGGACACCCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAAGCTGGAGTACAACACTACA
 3XP3-EYFP MARKER >

7800
 ACAGCCACAACGCTCTATATCATGGCCGCAAGCAGAGAAGACGGCATCAAGGTGAACCTTCAAGATCCGCCCAACAATCGAGGACGGCAGCGTGCAGCTCGC
 3XP3-EYFP MARKER >

7900
 CGACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCCGTGTCTGTGCCCCGACAAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAAGACCCCCAAC
 3XP3-EYFP MARKER >

8000
 GAGAGCGCGATCACATGGTCTGTGGAGTTCGTGACCGCGCCCGGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAAGCGGGCGCGACTCTAGAT
 3XP3-EYFP MARKER >

8100
 CATAATCAGCCATACCACATTGTAGAGGTTTACTTGCTTTAAAAAACCTCCACACCTCCCCCTGAACCTGAAACATAAAATGAATGCAATTGTTGTT
 3XP3-EYFP MARKER >

FIG. 14(B) CONT.

```

8200 GTTAACTGTTTATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCAATTTTTTCACTGCATTCTAGTTGTGGTT
      3XP3-EYFP MARKER >
8300 TGTCCAAACATCAATGTATCTTAAAGCTTATCGATACGGGTACGGCGCGCCTAGTGGATCCCATGCGTCAATTTACGCATGATTATCTTTAACGTAC
      3XP3-EYFP MARKER >
      < LEFT TERMINAL REPEAT
8400 GTCACAAATATGATTATCTTTCTAGGGTTAATCTAGCTGCGTGTCTCGAGCGTGTCTGAGCATCTTCATCTGCTCCATCAGCTGTAAACACATTTGCAC
      < LEFT TERMINAL REPEAT
8500 CGCGAGTCTGCCCCGTCTCCACGGGTTCAAAAACGTGAATGAACGAGGGCGGCCCGGGTAACTCAGGGGTATCCATGTCCATTTCTGCGGCATCCA
8600 GCCAGGATACCCGTCCTCGCTGACGTAATATCCCAGCGCGCACCGCTGTCAATCTGCACACCGGCACGGCAGTTCCGGCTGTCCGGGTATTGTTC
8700 GGGTTGCTGATGCGCTTCGGGCTGACCATCCGGAACTGTGTCCGAAAGCCGCGACGAAGTGGTATCCCAGGTGGCCTGAACGAACAGTTCACCGTTAA
8800 AGCGTGATGGCCACACCTTCCCAGAAATCATGGTAAACGTGCGTTTTCGCTCAACGTCAATGCAGCAGCATCTCTCGGCAAACTCTTTCCATGC
8900 CGCTTCAACCTCGCGGGAAGGCACGGGCTTCTTCTCCCCGATGCCCAGATAGCGCCAGCTTGGCGCATGACTGAGCCGGAAAAAGACCCGACGATA
9000 TGATCCTGATGCAGCTAGATTAAACCTAGAAAGATAGTCTGCGTAAAAATTGACGCATGGGATCCCCCGGGCTGCAGGAATTTCGATATCAAGCTTATCGAT
      < RIGHT TERMINAL REPEAT
ACCGTCGAAGCTT -- (SEQ ID NO:50) --

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FIG. 14(B) CONT.

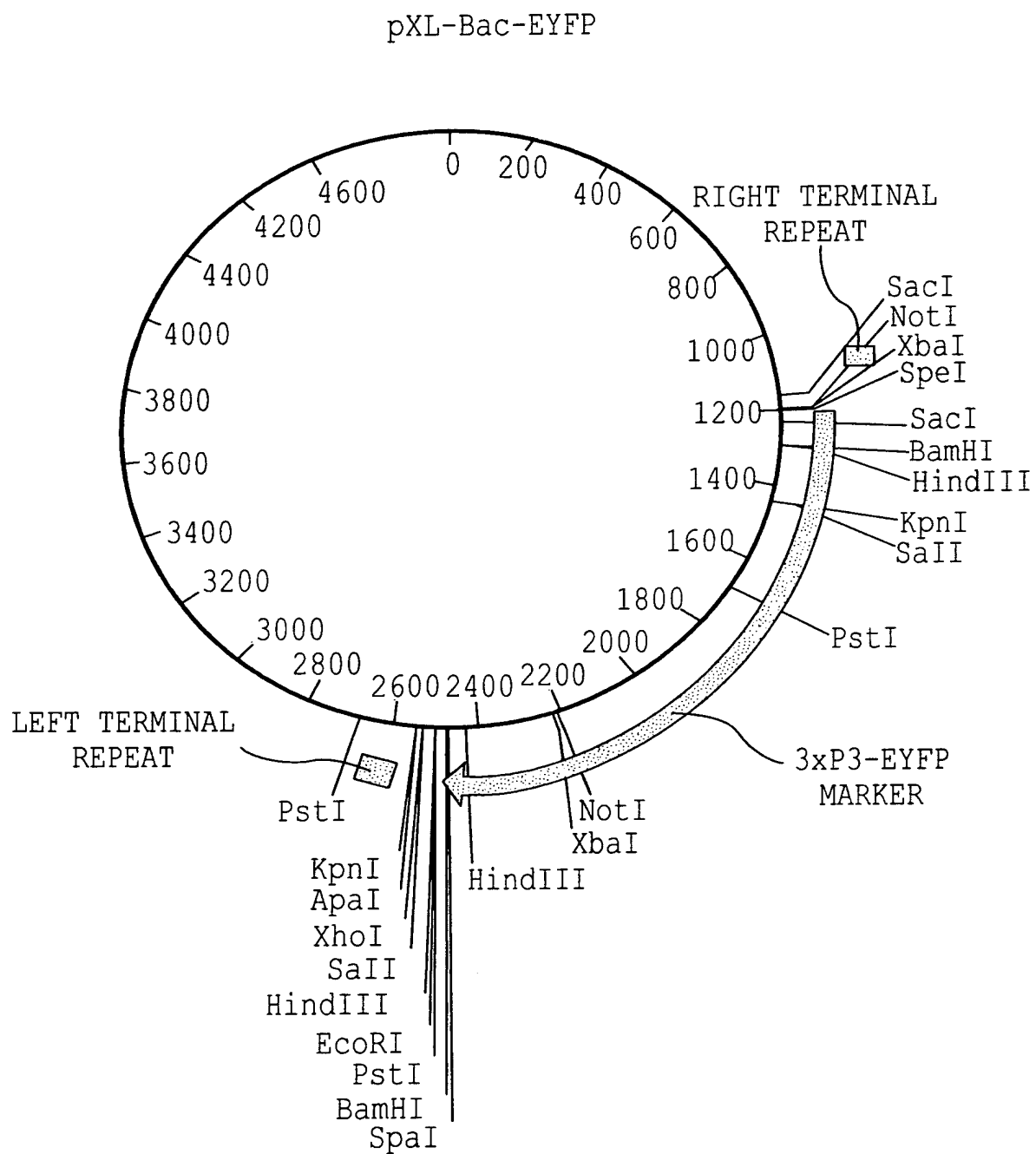


FIG. 15A

pXL-Bac-EYFP
Sequence Range: 1 to 4951

100
CTAAATTGTAAGCGTTAATAATTTTGTAAAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCAAAATCCCTTAT
200
AAATCAAAAGAAATAGACCGAGATAGGGTTGAGTGTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGGAAAAA
300
CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCCTAATCAAGTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAG
400
CCCCCGATTAGAGCTTGACGGGGAAGCCGGGAACGTGGCGAGAAAGGAAGGAAAGCAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG
500
GTCACGCTGCGGTAACCAACACACCCCGCGCGCTTAATGCGCGCGTACAGGGCGGTCCCATTCGCCATTACAGGCTGCGCAACTGTTGGGAAGGGCGGAT
600
CGGTGGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTGCAAGCGGATTAAGTTGGTTAACGCCAGGGTTTTCGCCAGTCACGACGTTG
700
TAAACGACGGCCAGTGAGCGCGCGCGCGGGTAACCTACGGGGTATCCATGTCCATTCTGCGGCATCCAGCCAGGATACCCGTCCCTCGCTGACGTAAT
800
ATCCCAGCGCGCACCGCTGTCAATTAATCTGCACACCGGCACGGCAGTTCGGCTGTCCCGGTAATTGTTCCGGTTGCTGATGCGCTTCGGGCTGACCAT
900
CCGGAAGTGTCCGGAAAAGCCCGACGAACCTGGTATCCAGGTGGCCTGAACGAACAGTTCAACCGTTAAAGCGTGATGGCCACACCTTCCCCGAATC
1000
ATCATGGTAAACGTGCGTTTTCGCTCAACGTCAATGCAGCAGCAGTCATCCTCGGCAAACTCTTTCCATGCCGTTCAACCTCGCGGGAAGGCACGGG
1100
CTTCTTCTCTCCCGATGCCCCAGATAGCGCCAGCTTGGCGGATGACTGAGCCGGGAAAAAGACCCGACGATATGATCCTGATGCAGCTAGATTAAACCTAG
1200
AAAGATAGTCTGCGTAAAAATTGACGCGATGATCTAATTAAACCTCACTAAAGGGAACAAAAGCTGGAGCTCCACCGGTGGCGGCGCTCTAGAACTAGT
< RIGHT TERMINAL REPEAT

FIG. 15(B)

1300 GTTCCCAATGGTTAATTCGAGCTGCCCCGGGATCTAATTCAATTAGAGCTAATTCAATTAGGATCCAAGCTTATCGATTTC
 3XP3-EYFP MARKER >
 1400 GAACCCCTCGACCGCGGAGTATAAATAGAGCGCTTCGTCTACGGAGCGACAATTCAATTCAAACAAGCAAAGTGAACACGTCGCTAAGCGAAAGCTAAG
 3XP3-EYFP MARKER >
 1500 CAAATAACAAGCGCAGCTGAACAAGCTAAACAATCGGGGTACCGCTAGAGTCGACGGTACGATCCACCGGTCCGCCACCATGTTGAGCAAGGCGGAGGAG
 3XP3-EYFP MARKER >
 1600 CTGTTACCGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGGCGATGCCACCTACG
 3XP3-EYFP MARKER >
 1700 GCAAGCTGACCCCTGAAGTTCATCTGCACCAACCGCAAGCTGCCCGTGCCCTGGCCCCACCCTTCGTGACCACCTTCGGCTACGGCCTGCAGTGCTTCGCCCCG
 3XP3-EYFP MARKER >
 1800 CTACCCCGACCAATGAAGCAGCAGACTTCTTCAAGTCCGCCATGCCCCGAAGGTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTAC
 3XP3-EYFP MARKER >
 1900 AAGACCCGCGCGAGGTGAAGTTCGAGGGCGACACCCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACA
 3XP3-EYFP MARKER >
 2000 AGCTGGAGTACAAC TACAACAGCCACAACGTC TATATCATG GCGGACAAGCAGAAGAACGGCATCAAGGTGA ACTTCAAGATCCGCGCACACATCGAGGA
 3XP3-EYFP MARKER >

FIG. 15(B) CONT.

```

2100 CCGCAGCGTG CAGCTCGCCGACCACTAC CAGCAGAACACCCCAATCGGCGACGGCCCGTGCTGCTGCCCCGACAACCACTACCTGAGCTAC CAGTCCGCC
      3XP3-EYFP MARKER >
2200 CTGAGCAAAGACCCCAACGAGAGCGGATCACATGGTCCTGCTGGAGTTCGTGACCGCCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAA
      3XP3-EYFP MARKER >
2300 GCGCCCGGACTCTAGATCATATAATCAGCCATACCACATTGTAGAGGTTTTACTTGCTTTAAAAAACCTCCACACACCTCCCCCTGAACCTGAAACATATAAA
      3XP3-EYFP MARKER >
2400 ATGAATGCAATTGTTGTTAACTTGTTATTGTCAGCTTATAATGGTTACAAAATAAAGCAATAGCATCACAAATTCACAAATAAAGCATTTTTTTCAC
      3XP3-EYFP MARKER >
2500 TGCATTCTAGTTGTGTTGTCCAAACTCATCAATGTATCTTAAAGCTTATCGATACGGTACGGCGCGCCTAGGCAC TAGTGGATCCCCCGGGCTGCAG
      3XP3-EYFP MARKER >
2600 GAATTCGATATCAAGCTTATCGATACCGTCGACCTCGAGGGGGGGCCGGTACCCCAATTTCGCCCTATAGTGAGTCGTATTAAGATCAGCGTAGATCCAT
      <
2700 GCGTCAATTTTACGCATGATTATCTTTAACGTACGTCACAATAATGATTATCTTTCTAGGGTTAATCTAGCTGCGTGTCTGCAGCGGTGTCGAGCATCTTC
      LEFT TERMINAL REPEAT <
2800 ATCTGCTCCATCAGCGTGTA AACACATTTCACCCGCGAGTCTGCCCGTCTCCACGGGTTCAAAAAACGTGAATGAACGAGGGCGGCTTGGCGTAATCAT
2900 GGT CATAGCTGTTTCTGTGAAATTGTTATCCGCTCACAAATTCACACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCCTAATGAGT

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FIG. 15(B) CONT.

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3000 GAGCTAACTCACATTAAATTGCGTTGCGCTCACTGCCCCGCTTTCCAGTCGGGAAACCTGTCTGTCCAGCTGCATTAAATGAATCGGCCAACGCGCGGGGAGA
    >Cole1_origin
    |
    |
3100 GCGGTTTGCGTATTGGGCGCTCTTCCGCTTCCCTCGCTCACTGACTCGCTGCGCTCGGTCTGTTCGGCTGCGGAGCGGTATCAGCTCACTCAAAGGCGG
3200 TAATACGGTTATCCACAGAAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGCCAGGAACCGTAAAAAAGGCCGCTTGCTGGC
3300 GTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGTGGCGAAACCCGACAGGACTATAAAGATACCAGCGCTT
3400 CCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCGGAACCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCTATA
3500 GCTCACGCTGTAGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGCTGTGTGCACGAACCCCCGTTACGCCCCGACCGCTGCGCCTTATCCGG
3600 TAACTATCGTCTTGAGTCCAAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCT
3700 ACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGCACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTG
3800 GTAGCTCTTGATCCGGCAACAACACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACCGCGAGAAAAAAGGATCTCAAGAAGATCC
3900 TTTGATCTTTTACGGGGTCTGACGCTCAGTGGAAACGAAACTCACGTTAAGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTT
4000 TTAAATTAAAAATGAAGTTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGA
    _____>
    AMPICILLIN RESISTANCE

```

FIG. 15(B) CONT.

4100 TCTGTCTATTTTCGTTCATCCATAGTTGCCCTGACTCCCCGTCGTGTAGATAAACTACGATACGGGAGGGCTTACCATCTGGCCCCCAGTGCTGCAATGATACC
 > AMPCILLIN RESISTANCE
 4200 GCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACACAGCCAGCCGGAAGGCCGAGCGCAGAAGTGGTCCCTGCAACTTTATCCGCCCTCCATC
 > AMPCILLIN RESISTANCE
 4300 CAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCCAGTTAATAAGTTTGGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACAGGCT
 > AMPCILLIN RESISTANCE
 4400 CGTCGTTTGGTATGGCTTCATTCAGCTCCCGGTTCCCAACGATCAAGCGGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTTAGCTCCTTCGGTCC
 > AMPCILLIN RESISTANCE
 4500 TCCGATCGTTGTCAAGTAAGTTGGCCGCGAGTTATCACTCATGTTATGGCAGCACTGCATAATTCTCTTACTGTCTATGCCATCCGTAAGATGCTTT
 > AMPCILLIN RESISTANCE
 4600 TCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAAATAGTGTATGCGGCGACCGAGTTGCTCTTGGCCGCGTCAATACGGGATAATACCGCGCCAC
 > AMPCILLIN RESISTANCE
 4700 ATAGCAGAACTTTAAAAGTGCTCATCATTTGGAAAACGTTCTTCGGGGCGAAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCAC
 > AMPCILLIN RESISTANCE
 4800 TCGTGCACCAACTGATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCG
 > AMPCILLIN RESISTANCE
 4900 ACACGGAAATGTTGAATACTACTACTCTTCCTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTATTT
 > AMPCILLIN RESISTANCE
 AGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCCCGCGAAAAAGTGCCAC -- (SEQ ID NO:51) --

FIG. 15(B) CONT.

pXL-Bac-EGFP

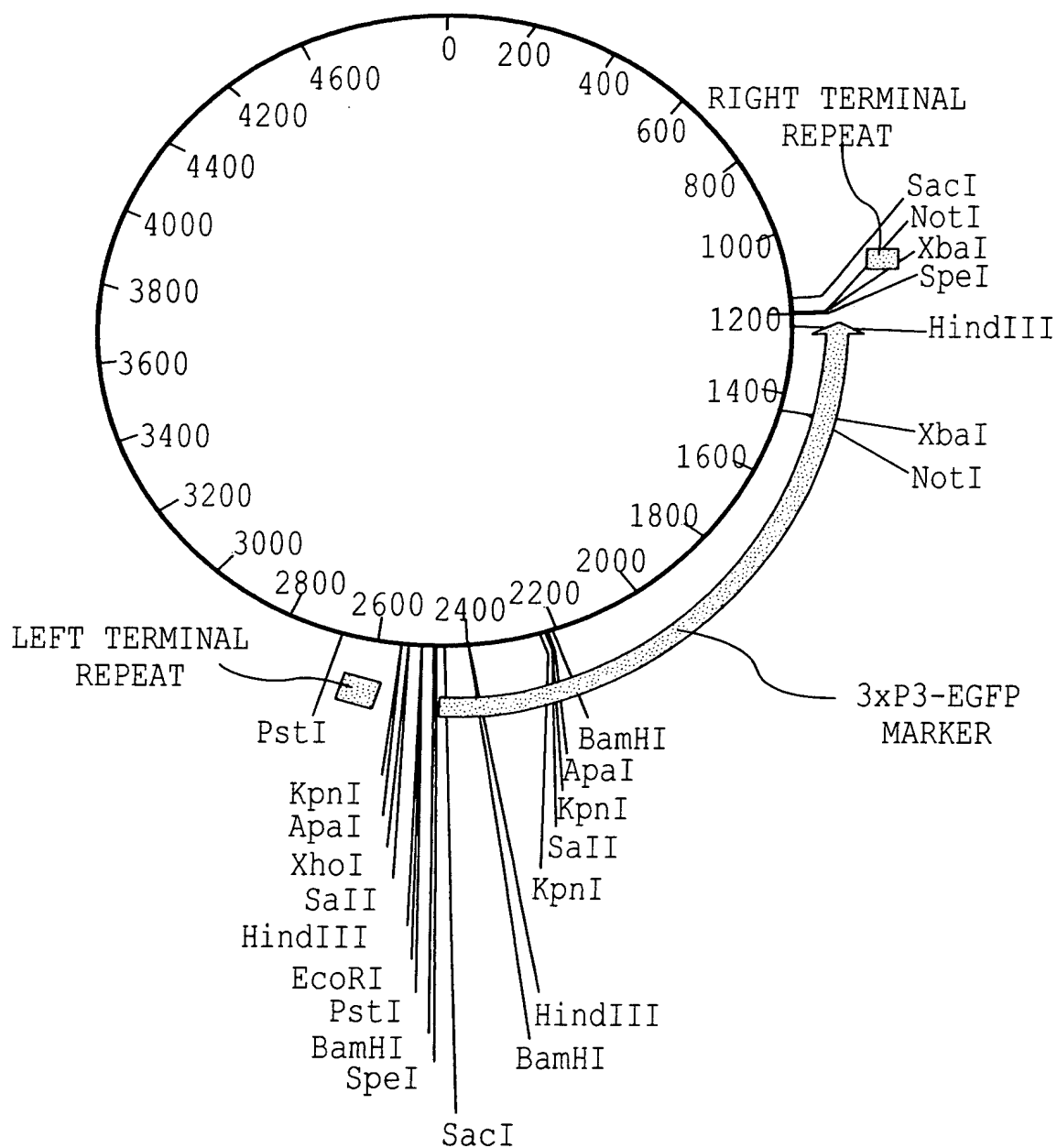


FIG. 16A

pXL-Bac-EGFP
Sequence Range: 1 to 4952

100 CTAAATTGTAAGCGTTAATAATTTTGTAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCAAAATCCCTTAT
200 AAATCAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCAGTTTGGACAAGAGTCCACTATTAAAGAAGCTGGACTCCAACGTCAAAGGGCGGAAAAA
300 CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCCTAATCAAGTTTGTGGGTGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAG
400 CCCCCGATTTAGAGCTTGACGGGGAAGCCCGCGAAGCTGGCGAGAAAGGAAGGAAAGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG
500 GTCACGCTGGCGGTAAACCACACACCCGCCGCGCTTAATGGCGCGCTACAGGGCGCGTCCCATTTCGCCATTTCAGGCTGGCAACTGTTGGGAAGGGCGAT
600 CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTGCAAGCGGATTAAAGTTGGTAACGCCAGGGTTTCCCAGTCACGACGTTG
700 TAAACGACGGCCAGTGACGCGCCCGCGGGTAACTCACGGGGTATCCATGTCCATTCTCGGGCATCCAGCCAGGATACCCGTCCTCGCTGACGTAAT
800 ATCCAGCGCCGACCGCTGTCAATTAATCTGCACACCGGCACGGCAGTTCGGGTGTCCGGGTATTGTTCCGGTGTGCTGATGCGCTTCGGGCTGACCAT
900 CCGGAACGTGTCTCCGGAAAGCCCGGACGAACTGGTATCCCAGGTGGCCTGAACGAACAGTTACCCGTTAAAGGCGTGCAATGCCACACCTTCCCCGAATC
1000 ATCATGGTAACGTGCGTTTTCGCTCAACGTCAATGCAGCAGCAGTCATCCTTCGGCAAACTCTTTCCATGCCGCTTCAACCTCGCGGGAAGGCACGGG
1100 CTTCTTCCCTCCCGATAGCCAGATAGCCAGCTTGGCGGATGACTGAGCCCGGAAAAAGACCCGACGATATGATCCTGATGCAGCTAGATTAAACCCCTAG

FIG. 16(B)

1200
AAAGATAGTCTGCCGTAAAAATTGACGCATGATCTAATTAAACCTCACTAAAGGGAACAAAAGCTGGAGCTCCACC GCGGTGCCGGCCGCTCTAGAACTAGT
< RIGHT TERMINAL REPEAT
1300
GCCGTACCGGTATCGATAAGCTTTAAGATAACATGATGAGTTTGGACAAAACCACTAGAAATGCAGTGAAAAAATGCTTTATTGTGAAATTGTGTGAT
< 3XP3-EGFP MARKER
1400
GCTATTGCTTTATTGTAAACCATTATAAGCTGCAATAAACAAGTTAAACAACAACAATTGCATTCAATTTATGTTTCAGGTTCAGGGGGAGGTGTGGGAGG
< 3XP3-EGFP MARKER
1500
TTTTTTAAAGCAAGTAAACCTCTACAAATGTGGTATGGCTGATTATGATCTAGAGTCGGCGCCGCTTACTTGTACAGCTCGTCCATGCCGAGAGTGAT
< 3XP3-EGFP MARKER
1600
CCCCGGCGGGTACGAACTCCAGCAGGACCATGTGATCGCGCTTCTCGTTGGGTCTTTGCTCAGGGCGGACTGGGTGCTCAGGTAGTGGTTGTCGGGC
< 3XP3-EGFP MARKER
1700
AGCAGCAGCGGGCCGTCGCCGATGGGGGTGTTCTGCTGGTAGTGGTCGGCGAGCTGCACGGCTGCCGTCTCGATGTTGTGGCGGATCTTGAAGTTCACCT
< 3XP3-EGFP MARKER
1800
TGATGCCGTTCTTCTGCTTGTCCGGCCATGATATAGACGTTGTGGCTGTTGTAGTTGTACTCCAGCTTGTGCCCCAGGATGTTGCCCGTCCCTTGAAGTC
< 3XP3-EGFP MARKER
1900
GATGCCCTTCAGCTCGATGCGGTTCACCAGGGTGTGCCCTCGAACTTCACCTCGGCCGGGTCTTGTAGTTGCCGTCTGTCCTTGAAGAAGATGGTGCGC
< 3XP3-EGFP MARKER
2000
TCCTGGACGTAGCCTTCGGGCATGGCGGACTTGAAGAAGTCGTGCTGCTTCATGTGGTCGGGTAGCGGCTGAAGCACTGCACGCCGTAGGTCAGGGTGG
< 3XP3-EGFP MARKER
2100
TCACGAGGGTGGCCAGGGCAGGGCAGCTTGCCGGTGGTGCAGATGAACCTCAGGGTCAGCTTGCCGTAGGTGGCATCGCCCTCGCCCTCGCCGACAC
< 3XP3-EGFP MARKER

FIG. 16(B) CONT.

2200 GCTGAAC TTGTGGCCGTTTACGTGCGCGTCCAGCTCGACCGATGGGCACCA^{3XP3-EGFP MARKER}CCCGGTGAACAGCTCCTCGCCCTTGCTCACCATTGGTGGCGACCGGT
2300 GGATCCCGGGCCCGGTACCGTCGACTCTAGCGGTACCCCGATTGTTTAGCTTGTTTCAGCTGCGCTTGTTTATTTGCTTAGCTTTCGCTTAGCGACGTG
2400 TTCAC TTGCTTGTTGAATTGAATTGTCGCTCCGTAGACGAAGCGCCTCTATTATAC TCCGGCGGTGAGGGTTCGAAATCGATAAGCTTGGATCCTA
2500 ATTGAATTAGCTCTAATTGAATTAGTCTCTAATTGAATTAGATCCCGGGCGAGCTCGAATTAA^{3XP3-EGFP MARKER}CCATTGTGGGAACACTAGTGGATCCCCCGGGCTGCA
2600 GGAATTCGATATCAAGCTTATCGATACCGTCGACCTCGAGGGGGCGGTACCAATTGCGCCCTATAGTGATCGTATTAAGATCAGCGGTAGATCCA
2700 TCGGTCAATTTTACGCATGATTATCTTTAACGTACGTCACAATATGATTATCTTTCTAGGGTTAATCTAGCTGCGTGTCTCGACGCTGTCGAGCATCTT
2800 CATCTGCTCCATCAGCTGTAAACACACATTTGCACCGCGAGTCTGCCCGTCTCCACGGGTTCA^{LEFT TERMINAL REPEAT}AAACCGTGAATGAACGAGCGCGCTTGGCGTAATCA
2900 TGGTCATAGCTGTTTCCTGTGTGAATTTGTTATCCGCTCACAAATCCACACACATACGAGCCGGAAGCATAAAGTGTAAAGCCTGGGGTGCCCTAATGAG
3000 TGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCCGCTTCCAGTCGGGAACCTGTCTGTGCCAGCTGCATTAATGAATCGGCCCAACGCCGGGGAG
3100 AGCGGTTTGGGTATTTGGGCGCTCTTCCGCTTCCCTCGCTCACTGACTCGCTGCGCTCGGTTCGGCTGCCGGCAGCGGTATCAGCTCACTCAAAGGCG
3200 GTAATACGGTTATCCACAGAATCAGGGGATAACGAGGAAGAACATGTAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGG
^{COLE1 ORIGIN}

FIG. 16(B) CONT.

3300 CGTTTTTCCATAGGCTCCGCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATAACCAGGCGTT
 COLE1 ORIGIN >
 3400 TCCCCCTGGAAGCTCCCTCGTGGCTCTCCTGTTCGACCCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCAT
 COLE1 ORIGIN >
 3500 AGCTCAGCTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTTCCAAAGCTGGGCTGTGTGCACGAACCCCGTTCAGCCCCGACCGCTGCGCCTTATCCG
 COLE1 ORIGIN >
 3600 GTAACATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGC
 COLE1 ORIGIN >
 3700 TACAGAGTCTTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTT
 COLE1 ORIGIN >
 3800 GGTAGCTTTGATCCGGCAACAACACCCTGCTGTAAGCGTGGTTTTTTTGTGTTGCAAGCAGCAGATTACGGCGCAGAAAAAAGGATCTCAAGAAGATC
 COLE1 ORIGIN >
 3900 CTTTGATCTTTTACGGGGTCTGACGCTCAGTGGAACGAAAAACTCACGTTAAGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCT
 COLE1 ORIGIN >
 4000 TTAAATTAATAATGAAGTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCG
 COLE1 ORIGIN >
 4100 ATCTGCTATTTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAAAGTACGATACGGGAGGCTTACCAATCTGGCCCCCAGTGCTGCAATGATAC
 AMPICILLIN RESISTANCE
 AMPICILLIN RESISTANCE >

FIG. 16(B) CONT.

4200 CGCGAGACCCACGCTCACCGGCTCCAGATTATCAGCAATAAACACGACCCAGCCGGAAGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCCTCCAT
 AMPCILLIN RESISTANCE >
 4300 CCAGTCTATTAAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCCAGTTAATAGTTTGGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACAGC
 AMPCILLIN RESISTANCE >
 4400 TCGTCGTTTGGTATGGCTTCATTACAGCTCCGGTTCCTCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGTTAGCTCCTTCGGTC
 AMPCILLIN RESISTANCE >
 4500 CTCCGATCGTTGTCAGAAAGTAAGTTGGCCGCGAGTGTATCACTCATGGTTATGGCAGCACTGCATAAATTCTTACTGTCTATGCCATCCGTAAGATGCTT
 AMPCILLIN RESISTANCE >
 4600 TTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAAATAGTGTATGCGGGCAGCCGAGTTGCTCTTGCCTGGCGTCAATACGGGATAATACCGCGCCA
 AMPCILLIN RESISTANCE >
 4700 CATAGCAGAACTTTAAAAGTGCTCATCATTTGGAAAACGTTCTTCGGGGCGAAACTCTCAAGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCA
 AMPCILLIN RESISTANCE >
 4800 CTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTACACGCGTTTCTGGGTGAGCAAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGC
 AMPCILLIN RESISTANCE >
 4900 GACACGGAAATGTTGAATACTCATACTCTTCCTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATTGAAATGTATT
 AMPCILLIN RESISTANCE >
 TAGAAAAATAAACAAATAGGGGTTCCGGCGCACATTTCCCCCGAAAAGTGCCAC -- (SEQ ID NO:52) --

FIG. 16(B) CONT.

pXL-Bac-ECFP

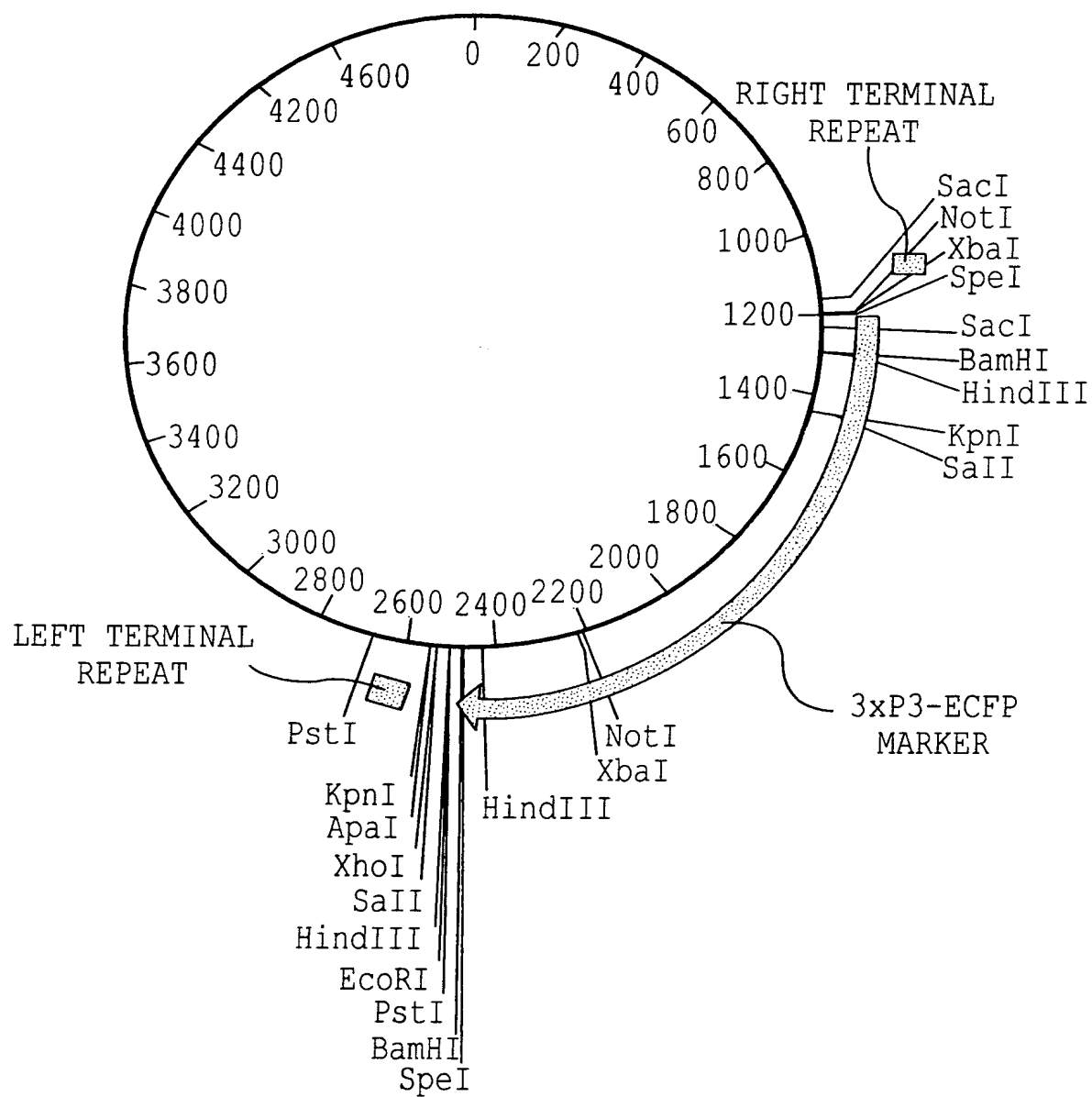


FIG. 17A

pXL-Bac-ECFP
Sequence Range: 1 to 4941

100
CTAAATTGTAAGCGTTAATATTTTGTAAAAATTCGCGTTAAATTTTGTGTTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCAAAATCCCTTAT

200
AAATCAAAGAATAGACCGAGATAGGGTTGAGTGTGTTGCCAGTTTGGAACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGGAAAAA

300
CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCCTAATCAAGTTTITGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAG

400
CCCCCGATTTAGAGCTTGACGGGGAAGCCGGCGAACGTGGCGAGAAAGGAAGGAAGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG

500
GTCACGCTGGCGGTAACCAACACACCCGCCGCGCTTAATGCGCCGCTACAGGGCGCGTCCCATTTCGCCATTTCAGGCTGGCAACTGTTGGGAAGGGCGAT

600
CGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGCGGATTAAGTTGGTTAACGCCAGGGTTTTCCCAGTCACGACGTTG

700
TAAACGACGGCCAGTGAGCGCGCCCGCGGGTAACTCACGGGGTATCCATGTCCATTCTGCGGCATCCAGCCAGGATACCCGTCCTCGCTGACGTAAT

800
ATCCCAGCGCGCACCGCTGTCAATTAATCTGCACACCGGCACGGCAGTTCCGGGTGTCCCGGTATTGTTCCGGTTGCTGATGCGCTTCGGGCTGACCAT

900
CCGGAACTGTGTCCGGAAAGCCGGACGAACTGGTATCCCAGGTGGCCTGAACGAACAGTTACCGTTAAAGCGGTGCATGGCCACACCTTCCCCGAATC

1000
ATCATGGTAAACGTGCGTTTTCGCTCAACGTCAATGCAGCAGCAGTCATCCTCGGCAAACTCTTTCCATGCCGCTTCAACCTCGCGGGGAAAAAGGCACGGG

1100
CTTCTTCCCTCCCCAGATAGCGCCAGCTTGGGGGATGACTGAGCCGGGAAAAAGACCCGACGATATGATCCTGTATGCAGCTAGATTAAACCCCTAG

FIG. 17(B)

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1200 AAAGATAGTCTGCGTAAATTTGACCGCATGATCTAATTAAACCTCACTAAAGGGAACAAAAGCTGGAGCTCCACCGGGTGGCGGCTCTAGAACTAGT
    < ___ RIGHT TERMINAL REPEAT ___
1300 GTTCCCACAATGGTTAATTCGAGCTCGCCCCGGGATCTAATTCAATTAGAGCTAATTCAATTAGAGTCCAAAGCTTATCGATTTC
    3XP3-ECFP MARKER
1400 GAACCCCTCGACCGCGGAGTATAAATAGAGGCGCTTCGTCTACGGAGCGGACAATTCAATTCAACAAGCAAAGTGAAACACGTCGCTAAGCGAAAGCTAAG
    3XP3-ECFP MARKER
1500 CAAATAACAAGCGCAGCTGAACAAGCTAAACAATCGGGGTACCGGTAGAGTCGACGGTACGATCCACCGGTCCGCCACCATGGTGAGCAAGGGCGGAGGAG
    3XP3-ECFP MARKER
1600 CTGTTACCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAACACGGCCACAAGTTCAGCGTGTCCGGCAGGGCGGCGGATGCCACCTACG
    3XP3-ECFP MARKER
1700 GCAAGCTGACCCCTGAAGTTCATCTGCACCCACCGGAAGCTGCCCGTGCCCTGCCACCCCTCGTGACCAACCCTGACCTGGGGCGTGCAGTGCTTCAGCCG
    3XP3-ECFP MARKER
1800 CTACCCCGACCACTGAAGCAGCAGGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTAC
    3XP3-ECFP MARKER
1900 AAGACCCGCGCGAGGTGAAGTTCGAGGGCGCACACCCCTGGTGAACCGCATCGAGCTGAAGGCGATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACA
    3XP3-ECFP MARKER
2000 AGCTGGAGTACAACACTACATCAGCCACAACGCTATATCACCCGCGACAAGCAGAAGAACGGCATCAAGGCCAACTTCAAGATCCGCCACAACATCGAGGA
    3XP3-ECFP MARKER

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FIG. 17(B) CONT.

```

2100 CCGCAGCGTGCCGACCACTACCAGCAGAACACCCCATCGGCGACGGCCCGTGTGCTGCCCGACAACCACTACCTGAGCACCCAGTCCGCC
    3XP3-ECFP MARKER >
2200 CTGAGCAAAGACCCCAACGAGAGCGCGGATCACATGGTCTCTGAGGTTCTGTGACCCGCCCGGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAA
    3XP3-ECFP MARKER >
2300 GCGGCCGCGACTCTAGATCATATAATCAGCCATACCACATTGTAGAGGTTTACTTGCTTTAAAAACCTCCCACACCTCCCCCTGAACCTGAAACATAAA
    3XP3-ECFP MARKER >
2400 ATGAATGCAATTGTTGTTGTTAACTTGTTATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATAAAGCATTTTTTTCAC
    3XP3-ECFP MARKER >
2500 TGCAATCTAGTTGTGTTGTCCAACTCATCAATGTATCTTTAAAGCTTATCGATACGCGTACGCGCTAGTGGATCCCCCGGGCTGCAGGAATTTCGATA
    3XP3-ECFP MARKER >
2600 TCAAGCTTATCGATACCGTCGACCTCGAGGGGGGGCCCGGTACCCAAATTCGCCCTATAGTAGTCGTATTAAAGATCACGCGTAGATCCATGCGTCAATTT
    <
2700 TACGCAATGATTATCTTTAACGTACGTCACAAATATGATTATCTTTCTAGGGTTAATCTAGCTGCGTGTCTGACGCGTGTGCGAGCATCTTTCATCTGCTCCA
    LEFT TERMINAL REPEAT <
2800 TCACGCTGTAAACACATTTGCACCGCGAGTCTGCCCGTCTCCACGGGTTCAAATAACGTGAATGAACGAGCGCGGCTTGGCGTAATCATGGTCATAGCT
2900 GTTTCCTGTGAAATTGTTATCCGCTCACAAATCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCTAATGAGTGAGCTAACTC
3000 ACATTAAATTGCGTTGCGCTCACTGCCCCGCTTTCAGTCCGGAAACCTGTGTCGCCAGCTGCATTAAATGAATCGGCCAACGCGCGGGAGAGCGGTTTGC

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FIG. 17(B) CONT.

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>ColE1_origin
|
|
3100 GTATTGGCGCTCTTCCGCTTCCTCGCTCACTGACTCGCTCGGCTCGGTCTCGGCTGCGGCGAGCGGTATCAGCTCAAGGCGGTAAATACGGTT
3200 ATCCACAGAATCAGGGGATAACGCAGGAAGAACAATGTAGCAAAAGGCCAGCAACCGTAAAAAGGCCGCTTGCTGGCGTTTTCCTCAT
3300 AGGCTCGGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGCACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAA
3400 GCTCCCTCGTGGCTCTCCTGTTCGGACCCCTGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTG
3500 TAGGTATCTCAGTTCGGTGTAGGTCGTTCCAGCTGGGCTGTGTGCACGAACCCCCCGTTACGCCCGACCGCTTATCCGGTAACTATCGT
3600 CTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTTCT
3700 TGAAGTGGTGGCCTAACTACGGCTACACTAGAAGCACAGTATTGGTATCTCGGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTG
3800 ATCCGGCAACAAACCCGCTGGTAGCGGTGGTTTTTTTGTGTGCAAGCAGCAGATTACGGCGAGAAAAAAGGATCTCAAGAAGATCCCTTTGATCTTT
3900 TCTACGGGTCTGACGCTCAGTGGAAACGAAAACCTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATAAA
4000 AATGAAGTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATT
_____ AMPCILLIN RESISTANCE _____>

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FIG. 17(B) CONT.

4100 TCGTTCATCCATAGTTGCCCTGACTCCCCGTCGTGTAGATAACTACGATACGGAGGGCTTACCATCTGCCCCAGTGTGCAATGATACCGCGAGACCCA
 AMPICILLIN RESISTANCE >
 4200 CGCTCACGGCTCCAGATTATCAGCAATAAACCCAGCCAGCCGGAAGGCCGAGCGCAGAAAGTGGTCGTGCAACTTTATCCGCCCTCCATCCAGTCTATTA
 AMPICILLIN RESISTANCE >
 4300 ATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGC CGAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGGCTCGTCGTTGG
 AMPICILLIN RESISTANCE >
 4400 TATGGCTTCATTCAGCTCCGGTTC CCAACGATCAAGCGGAGTTACATGATCCCCCATGTTGTGCAAA⁴AAGCGGTTAGCTCCTTCGGTCCCTCCGATCGTT
 AMPICILLIN RESISTANCE >
 4500 GTCAGAAGTAAGTTGGCCGCAGTGTTATCACTCATGTTATGGCAGCACTGCATAATTCTCTTACTGT CATGCCATCCGTAAGATGCTTTTCTGTGACTG
 AMPICILLIN RESISTANCE >
 4600 GTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGCGGCGACCGAGTTGCTCTTGC CCGCGTCAATACGGGATAATACCGCGCCACATAGCAGAAC
 AMPICILLIN RESISTANCE >
 4700 TTTAAAGTGCTCATCATTTGGAAACGTTCTTCGGGGCGGAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAAACCCACTCGTGCACCC
 AMPICILLIN RESISTANCE >
 4800 AACTGATCTTCAGCATCTTTTACTTTTACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGC AAAAATGCCGCAAAAAGGGAATAAGGGCGACACGGAAAT
 AMPICILLIN RESISTANCE >
 4900 GTTGAATACTCATACTCTTCCTTTTCAATATATTGAAGCATTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTATTTAGAAAAATAA
 AMPICILLIN R >
 ACAAAATAGGGGTTCCGCGCACATTTCCCCGAAAAAGTGCCAC -- (SEQ ID NO:53) --

FIG. 17(B) CONT.

pBS-ITR-ECFP

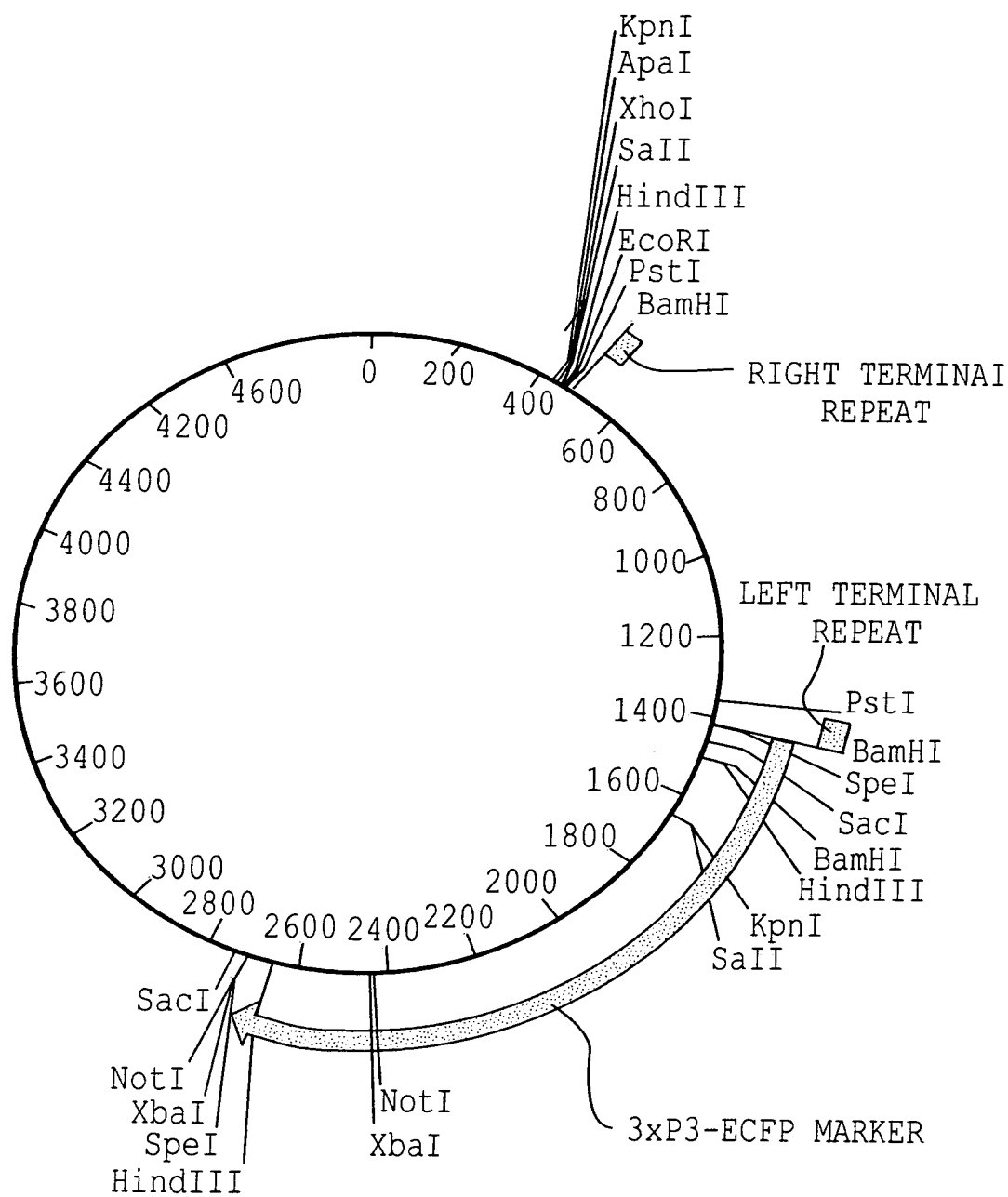


FIG. 18A

PBS-ITR-ECFP
Sequence Range: 1 to 4943

100
CACCTGACGGCCCTGTAGCGGCGCATTAAAGCGGGGGTGTGTGGTTACGCCAGCGTGACCGCTACACTTGCCAGCGCCCTAGCGCCCGTCCTTT
200
CGCTTCTTCCCTTCTTCGCCACGTTCCGCCGGCTTCCCCGTCAAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCGGATTAGTGCTTACGGCAC
300
CTCAGCCCCAAAACTTGATTAGGGTGATGGTTACGTAAGTGGGCCATCGCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTA
400
ATAGTGGACTCTTGTTCCAAACCTGGAACAACACTCAACCTATCTCGGTCTATTCTTTTGATTATAAGGATTTTGCAGATTTCGGCCTATTGGTTAAA
500
AAATGAGCTGATTTAACAAAAATTTAACGCGAATTTTAACAAAAATATAACGCTTACAAATTCGCCATTCAGGCTGCGCAACTGTTGGGAAGGGC
600
GATCGGTGGGGCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTCAAGCGATTAAAGTTGGTAACGCCAGGGTTTTCCCAGTCACGACG
700
TTGTAAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGCGAATTGGGTACCGGGCCCCCTCGAGTTCGACGGTATCGATAAGCTTGATATC
800
GAATTCTGCAGCCCCGGGGATCCCATGCGTCAATTTTACGCAGACTATCTTTCTAGGGTTAATCTAGCTGCATCAGGATCATATCGTCGGGTCTTTTT
900
_____ RIGHT TERMINAL REPEAT _____>
CCGGCTCAGTCATCGCCCCAAGCTGGCGCTATCTGGGCATCGGGGAGGAAGCCCCGTGCCCTTTCCCGCGAGGTTGAAGCGGCATGGAAGAGAGTTTGCC
1000
GAGGATGACTGCTGCTGCATTGACGTTGAGCGAAACGCACGTTTACCATGATGATTTCGGGAAGGTGTGGCCATGCACGCCCTTTAACGGTGAACTGTTCG
1100
TTCAGGCCACCTGGGATACCAGTTCGTCCGGCTTTTCCGGACACAGTTCGGATGGTCAGCCCGAAGCGCATCAGCAACCCGAACAATACCGGCGACAG

FIG. 18(B)

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1200 CCGAACTGCCGTGCCGGTGTCCAGATTAAATGACAGCGGTGCGGCGCTGGGATATTACGTACGCGGACGGGTATCCTGGCTGGATGCCCGCAGAAATGG
1300 ACATGGATACCCCGTGAGTTACCCGGCGGCTCGTTCAATTCACGTTTTGAACCCGTGGAGGACGGGCAGACTCGCGGTGCAAAATGTGTTTTACAGCGGTGA
1400 TGGAGCAGATGAAGATGCTCGACACGCTGCAGAACACGCAGCTAGATTAAACCCTAGAAAGATAATCATATTTGTGACGTACGTTAAAGATAATCATGCGTA
1500 _____
    LEFT TERMINAL REPEAT
AAATTGACGCATGGGATCCACTAGTGTTCCCACAAATGGTTAATTCGAGCTCGCCCGGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAATTCA
_____
1600 _____ 3XP3-ECFP MARKER
ATTAGGATCCAAGCTTATCGATTTCGAACCCCTCGACCCGCCGGAGTATAAATAGAGCGGCTTCGTCTACGGAGCGACAATTCAATTCAAAACAAGCAAAGTG
_____ 3XP3-ECFP MARKER
1700 _____
AACACGTCGCTAAGCGAAAGCTAAGCAAATAAACAAAGCGCAGCTGAACAAGCTAAACAATCGGGGTACCGCTAGAGTCGACGGTACGATCCACCGGTCCG
_____ 3XP3-ECFP MARKER
1800 _____
CACCATGGTGAGCAAGGCGGAGGAGCTGTTACCGGGGTGGTGCCCATCCTGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGC
_____ 3XP3-ECFP MARKER
1900 _____
GAGGCGGAGGCGGATGCCACCTACGGCAAGCTGACCCCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCCGTGCCCTGGCCCCACCCCTCGTGACCACCCCTGA
_____ 3XP3-ECFP MARKER
2000 _____
CCTGGGGCGTCAGTGCTTCAGCCGCTACCCCGACCAACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCCCGAAGGCTACGTCCAGGAGCGCACCAT
_____ 3XP3-ECFP MARKER
2100 _____
CTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAG
_____ 3XP3-ECFP MARKER

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FIG. 18(B) CONT.

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2200 GAGGACGGCAACATCCTGGGGCACAAAGCTGGAGTACAACACTACATCAGCCACAACGTCCTATATCACCGCCGACAGCAAGAACGGCATCAAGGCCAACT
    3XP3-ECFP MARKER
2300 TCAAGATCCGGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACCTACCAGCAGAACACCCCCCATCGGGCAGCGGCCCGTGCTGCTGCCCGACAA
    3XP3-ECFP MARKER
2400 CCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAAGACCCCAACGAGAGCGCGATCACATGGTCTGCTGGAGTTCGTGACCGCGCGGGGATCACTCTC
    3XP3-ECFP MARKER
2500 GGCA TGGACGAGCTGTACAAGTAAAGCGGCGCGGACTCTAGATCATAATCAGCCATACCACATTTGTAGAGGTTTTACTTGCTTTAAAAAACCTCCCACA
    3XP3-ECFP MARKER
2600 CCTCCCCCTGAACCTGAAACATAAATGAATGCAATTGTTGTTAACTTGTTTATTCAGCCTTATAATGGTTACAAATAAAGCAATAGCATCACAAAT
    3XP3-ECFP MARKER
2700 TTCACAAATAAAGCAATTTTTTCACTGCATTCTAGTTGTGGTTGTGCCAAACTCATCAATGTATCTTAAAGCTTATCGATACGCGTACGGCGCGCCTAGG
    3XP3-ECFP MARKER
2800 CCGGCCGATACTAGTTCTAGAGCGGGCGCCACCGCGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAATTTTCGAGCTTGGCGTAATCATGGTCA
    >
2900 TAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAAATCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGTGCCCTAATGAGTGAGCT
3000 AACTCACATTAAATTGCGTTGCGGCTCACTGCCCCGCTTTCAGTCGGGAAACCTGTCTGTCGACGCTGCATTATGAATCGGCCCAACGCGGGGGAGAGGCGG

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FIG. 18(B) CONT.

>Cole1_origin

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3100 TTTGGCTATTGGGCGCTCTTCCGCTTCCTCGCTCACTGACTCGTGGCTCGGTGCTTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAATA
3200 CCGTTATCCACAGAAATCAGGGGATAACGCAGGAAGAACAATGTGAGCAAAAAGGCCAGGAACCGTAAAAAGCCGCTTGCTGGCGTTTT
3300 TCCATAGGCTCCGCCCCCTGACGAGCATCAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGCACAGGACTATAAGATACCAGGCTTCCCCCC
3400 TGGAACTCCCTCGTGGGCTCTCCTGTTCGACCCCTGCCGCTTACCGGATACCTGTCCGCCCTTTCCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCA
3500 CGCTGTAGGTATCTCAGTTCGGTGTAGTTCGCTCCAGCTGGGCTGTGTGCACGAACCCCGCTTCAGCCCGACCGCTTATCCGGTAAC
3600 ATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGA
3700 GTTCTTGAGTGGTGGCCTAACACTACGGCTACACTAGAAGGACAGTATTGGTATCTGGGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGC
3800 TCTTGATCCGGCAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTCGAAGCAGCAGATTACGGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGA
3900 TCTTTTCTACGGGGTCTGACGCTCAGTGGAAACGAAACTCACGTTAAGGATTTTGGTCATGAGATTATCAAAAAAGGATCTTCACCTAGATCCTTTTAAA
4000 TTAAAAATGAAGTTTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAAATCAGTGGCACCTATCTCAGCGATCTGT
4100 CTATTTCGTTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGTGCAATGATACCGCGAG
AMPCILLIN RESISTANCE
AMPCILLIN RESISTANCE

FIG. 18(B) CONT.

4200
 ACCCAGGCTCACCGGCTCCAGATTATCAGCAATAAACAGCCAGCCGGAAGGCCGAGCGCAGAGTGGTCCTGCAACTTTATCCGCCCTCCATCCAGTC
 AMPICILLIN RESISTANCE >
 4300
 TATTAAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCACGCTCGTCG
 AMPICILLIN RESISTANCE >
 4400
 TTTGGTATGGCTTCATTACAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTAGCTCCTTCGGTCCTCCGA
 AMPICILLIN RESISTANCE >
 4500
 TCGTTGTCAGAAAGTAAGTTGGCCCGCAGTGTATCACTCATGTTATGGCAGCACTGCATAATTCTCTTACTGTCTCATGCCATCCGTAAGATGCTTTTCTGT
 AMPICILLIN RESISTANCE >
 4600
 GACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATCGGGCACCAGTTGCTCTTGCCCCGGCGTCAATACGGGATAATACCGGCCACATAGC
 AMPICILLIN RESISTANCE >
 4700
 AGAACTTTAAAGTGCTCATCATTTGGAAACGTTCTTCGGGGCGAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTG
 AMPICILLIN RESISTANCE >
 4800
 CACCCAACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCCGCAAAAAGGGAATAAGGGCGACACG
 AMPICILLIN RESISTANCE >
 4900
 GAAATGTTGAATACTCATACCTTCCTTTTCAATATTATTGAAGCATTATCAGGGTTATTGTCTCATGACGGATACATATTGAAATGATTATGAAA
 AMPICILLIN RESISTANCE >
 AATAAACAAATAGGGTTCCGGCGCACATTTCCCCGAAAAGTGC -- (SEQ ID NO:54) --

FIG. 18(B) CONT.

pBS-ITR-EGFP

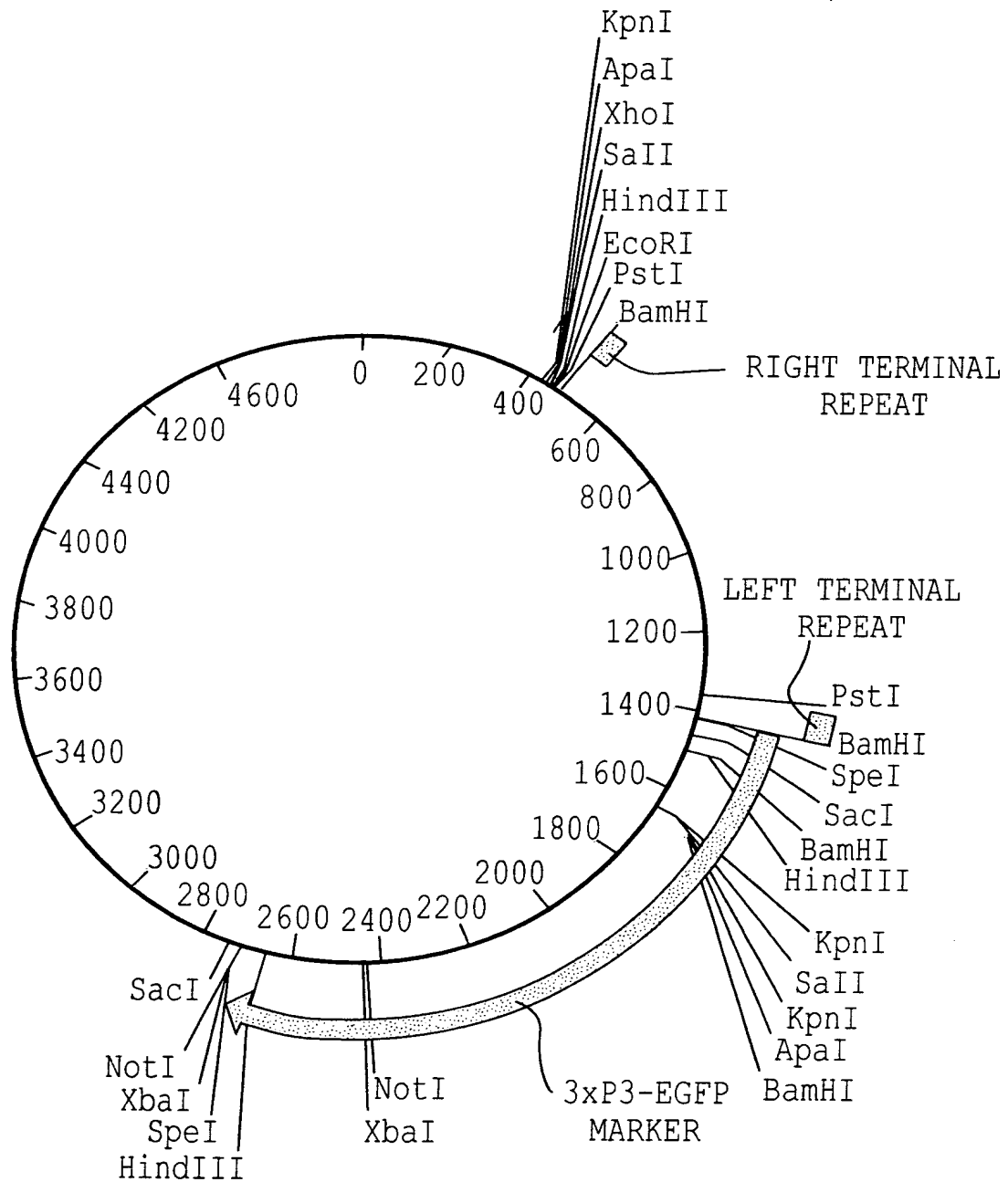


FIG. 19A

PBS-ITR-EGFP
Sequence Range: 1 to 4944

100
CACCTGACGGCCCTGTAGCGGCGGCATTAAAGCGCGGGGGTGTGGTTACGGCAGGCTGACCGCTACACTTGCCAGGCCCTAGCGCCCGCTCCTTT
200
CGCTTCTTCCCTTCTTCGCCACGTTCCCGGGCTTCCCGCTCAAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCCGATTAGTGCTTTACGGGCAC
300
CTCGACCCCAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATCGCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTA
400
ATAGTGGACTCTTGTTCCAAACTGGAACAACACTCAACCTATCTCGGTCTATTCTTTTGATTATAAGGGAATTTGCCGATTTCCGCCATTGTTAA
500
AAATGAGCTGATTTAACAAAATTTAACGCGAATTTAACAAAATATTAAACGCTTACAATTTCCATTCCGCTCAGGCTGCGCAACTGTTGGGAAGGCG
600
GATCGGTGGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGATGTGCTCAAGGCGATTAAAGTTGGTAACGCCAGGTTTTTCCCAGTCACGACG
700
TTGTAAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGCGAATTGGTACCGGGCCCCCTCGAGTCCGACGGTATCGATAAGCTTGATATC
800
GAATTCCTCAGCCCCGGGGATCCCATGCGTCAATTTACGCAGACTATCTTTCTAGGGTTAATCTAGCTGCATCAGGATCATATCGTCGGGTCTTTTT
900
CCGGCTCAGTCATCGCCCCAAGCTGGCGCTATCTGGGCATCGGGGAGGAAGACCCCGTGCCCTTTTCCCGCAGGTTGAAGCGGCATGGAAAGAGTTTGCC
1000
GAGGATGACTGCTGCTGCAATTGACGTTGAGCGAAACCGCACGTTTACCATGATGATTCCGGGAAGGTGTGGCCATGCACGCCTTTAACGGTGAACGTGTTCCG
1100
TTCAGGCCACCTGGGATACCAGTTCGTCCGGGCTTTTCCGGACACAGTTCGGATGGTCAGCCCGAAGGCGCATCAGCAACCCGAACAATACCGGGCAGAG

FIG. 19(B)


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1200 CCGAACTGCCGTGCCGGTGCAGATTAAATGACAGCGGTGCGGCGCTGGGATATTACGTCAGCGAGGACGGGTATCCTGGCTGGATGCCGCAGAAATGG
1300 ACATGGATACCCCGTGAGTTACCCGGCGGCTCGTTCAATTCACGTTTTTTGAACCCGTGGAGACGGGCAGACTCGCGGTGCAAAATGTGTTTTACAGCGGTGA
1400 TGGAGCAGATGAAGATGCTCGACACGCTGCAGAACACGCGAGCTAGATTAAACCCTAGAAAGATAATCATATTTGTGACGTACGTTAAAGATAATCATGCGGTA
1500 _____
    LEFT TERMINAL REPEAT
AAATTGACGCATGGGATCCACTAGTGTTCACACAATGGTTAATTCGAGCTCGCCCGGGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAAATTCA
    _____
    3XP3-EGFP MARKER
1600 ATTAGGATCCAAGCTTATCGATTTTCGAACCCCTCGACCGCGCGGAGTATAAATAGAGCGGCTTCGCTCTACGGAGCGACAATTCAATTCAAAACAAGCAAAGTG
    _____
    3XP3-EGFP MARKER
1700 AACACGTCGCTAAGCGAAAGCTAAGCAAATAAACAGCGCAGCTGAACAAGCTAAACAATCGGGGTACCGCTAGAGTCGACGGTACCGCGGGCCCCGGGAT
    _____
    3XP3-EGFP MARKER
1800 CCACCGGTGCCACCATGGTGAGCAAGGGCGAGGAGCTGTTACCCGGGTGGTGCCCATCCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCA
    _____
    3XP3-EGFP MARKER
1900 GCGTGTCCGGCGAGGGCGAGGCGGATGCCACCTACGGCAAGCTGACCCCTGAAGTTCATCTGCACCAACCGGCAAGCTGCCCTGGCCCCACCCCTCGT
    _____
    3XP3-EGFP MARKER
2000 GACCACCCCTGACCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCATGAAGCAGCACGACTTCTTCAAGTCCGCCCATGCCCGAAGGCTACGTCCAG
    _____
    3XP3-EGFP MARKER
2100 GAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCCGCGGAGGTGAAGTTCGAGGGCGACACCCCTGGTGAACCGCATCGAGCTGAAGGGCA
    _____
    3XP3-EGFP MARKER

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FIG. 19(B) CONT.

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2200 TCGACTTCAAGGAGGACGGCAACATCCTCTGGGGCACAAGCTGGAGTACAACTACAACAGCCACACAGTCTATATCATGTGCCCGACAAGCAGAGAACGGCAT
    3XP3-EGFP MARKER
2300 CAAGGTGAACCTTCAAGATCCGCCCAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCATCGGCGACGGCCCCCGTGTGCTG
    3XP3-EGFP MARKER
2400 CTGCCCCGACAACCACTACCTGAGCACCACCCAGTCCGCCCTGAGCAAAAGACCCCAACGAGAGCGCGGATCACATGGTCTGCTGGAGTTCGTGACCGCCGCCG
    3XP3-EGFP MARKER
2500 GGATCACTCTCGGCATGGACGAGCTGTACAAGTAAAGCGGGCGGACTCTAGATCATATAATCAGCCATACCACATTTGTAGAGGTTTACTTGCTTTAAAA
    3XP3-EGFP MARKER
2600 AACCTCCACACCTCCCCCTGAACCTGAAACATAAAATGAATGCAATTGTTGTTAACTGTTTATTGCAGCTTATAATGGTTACAAATAAAGCAATA
    3XP3-EGFP MARKER
2700 GCATCACAAATTTCACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGTTGTCCAAACTCATCAATGTATCTTAAAGCTTATCGATACGCGTACG
    3XP3-EGFP MARKER
2800 GCGCGCCTAGACTAGTTCTAGAGCGGGCCGCCACCGGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAATTTTCGAGCTTGGCGTAATCATGGTC
    >
2900 ATAGCTGTTTCCCTGTGTGAAATTGTTATCCGCTCACAAATCCACACAACATACGAGCCGGGAAGCATAAAGTGTAAGCCTGGGTGCCTAATGAGTGAGC
3000 TAACTCACATTAATTGCGGTGCGCTCACTGCCCGCTTCCAGTCGGGAACCTGTCTGTCAGCTGCATTAATGAATCGGCCAACGCCGGGGAGAGGGC

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FIG. 19(B) CONT.

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3100 GTTTGCGTATTGGGCGCTCTTCGGCTTCCTCGCTCACTGCTCGCTCGGCTCGTTCGGCTGCGGCGAGCGGTATCAGCTCAAAAGCGGTAAT
3200 ACGGTTATCCACAGAATCAGGGGATAACGAGGAAGAACAATGTAGCAAAAGCCAGCAAAAGGCCAGAACCGTAAAAAGCCGCTTGCTGGCGTTT
3300 TTCCATAGGCTCCGGCCCCCTGACGAGCATCACAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGCGTTTCCCC
3400 CTGGAAGCTCCCTCGTGGCTCTCCCTGTTCCGACCCCTGCCGCTTACCGGATACCTGTCCGCCCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTC
3500 ACGCTGAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGGCGCTTATCCGGTAAC
3600 TATCGTCTTGAGTCCAAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTTGCTACAG
3700 AGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGACAGTATTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAGAGAGTTGGTAG
3800 CTC TTGATCCGGCAAACAAACCCGCTGGTAGCGGTGGTTTTTTTGTGCAAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTG
3900 ATCTTTTCTACGGGTCTGACGCTCAGTGGAAACGAAACTCACGTTAAGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAA
4000 ATTAAAAATGAAGTTTAAATCAATCTAAAGTATATATAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGGATCTG
4100 TCTATTTCGTTCCATAGTTGCCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGA
AMPCILLIN RESISTANCE
AMPCILLIN RESISTANCE

FIG. 19(B) CONT.

4200
 GACCCAGCTCACCGGCTCCAGATTATCAGCAATAAACAGCCAGCCGGAAGGGCCGAGCGCAGAAAGTGGTCTTGCAACTTTATCCGGCCTCCATCCAGT
 AMPCILLIN RESISTANCE >
 4300
 CTATTAAATTGTTGCCGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACAGCTCGTC
 AMPCILLIN RESISTANCE >
 4400
 GTTGGTATGGCTTCATTCAGCTCCGGTTCCTCCACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCTCCG
 AMPCILLIN RESISTANCE >
 4500
 ATCGTTGTCAGAAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGCACTGCATAAATCTCTTACTGTCAIGCCATCCGTAAGATGCTTTTCTG
 AMPCILLIN RESISTANCE >
 4600
 TGA CTGGT GAGTACTCAACCAAGTCATTCTGAGAATAGTGATGCGGGACCGAGTTGCTCTTGCCCGGCGTCAATACGGGATAATACCGCGGCCACATAG
 AMPCILLIN RESISTANCE >
 4700
 CAGAACTTTAAAAGTGCTCATCATTGGAACGTTCTTCGGGGCGAAACTCTCAAGGATCTTACCCTGTTGAGATCCAGTTCGATGTAACCCACTCGT
 AMPCILLIN RESISTANCE >
 4800
 GCACCCAACTGATCTTCAGCATCTTTTACTTTCCACGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGGACAC
 AMPCILLIN RESISTANCE >
 4900
 GGAAATGTTGAATACTCATACTCTTCTTTTCAATATATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTATTAGAA
 AMPCILLIN RESISTANCE >
 AAATAAACAAATAGGGTTCCGGCGCACATTTCCCCGAAAAAGTGC -- (SEQ ID NO:55) --

FIG. 19(B) CONT.

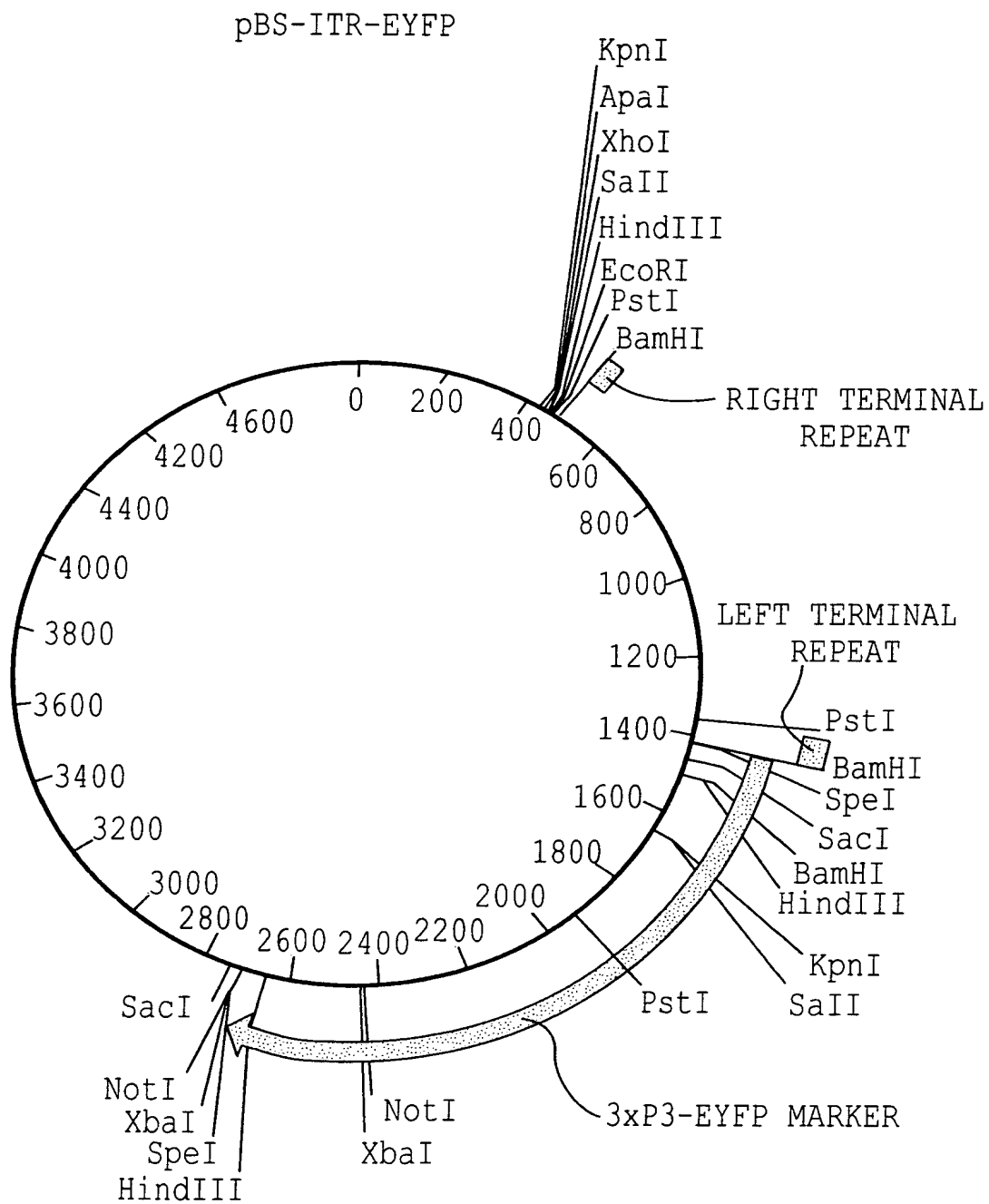


FIG. 20A

pBS-ITR-EYFP
Sequence Range: 1 to 4944

```
100 CACCTGACGGCCCTGTAGCGGCGCATTAAGCGCGGGGGTGTGGTTACGGCGACCGTGACCGCTACACTTGCCAGGCCCTAGCGCCCGCTCCTTT
200 CGCTTTCTCCCTTCTCTCGCCACGTTTCGCCGGCTTCCCGCTCAAGCTCTAAATCGGGGGCTCCCTTTAGGGTTCGATTTAGTGCTTTACGGCAC
300 CTCGACCCCAAAACTTGATTAGGGTGATGGTTCACGTAGTGGCCCATCGCCCTGATAGACGGTTTTTCGCCCTTTGACGTTGGAGTCCACGTTCTTTA
400 ATAGTGGA CTCTTGTTCCAA ACTGGAAACA CACTCAACCTATCTCGGTC TATTCTTTTGATTATAAGG GATTTCGCCGATTTCGGCCCTATTGGTTAAA
500 AAATGAGCTGATTTAACAAAAATTTAACGGGAATTTAACAAAAATATTAAACGCTTACAATTTCCCATTCAGGCTGCGCAACTGTTGGGAAGGGC
600 GATCGGTGCGGGCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGCGGATTAAAGTTGGGTACGCCAGGGTTTCCCAGTCACGACG
700 TTGTAAACGACGGCCAGTGAATTGTAATACGACTCACTATAGGGCGAATTGGGTACCGGCCCCCTCGAGTCGACGGTATCGATAAGCTTGATATC
800 GAATTCC TGCAGCCCCGGGGATCCCATGCGTCAATTTTACGCAGACTATCTTTCTAGGGTTAATCTAGCTGCATCAGGATCATATCGTCGGGTCTTTTTT
900 _____ RIGHT TERMINAL REPEAT _____>
CCGGCTCAGTCA TCGCCCAAGCTGGCGCTATCTGGGCA TCGGGGAGGAAGACCCCGTGCCCTTTTCCCGCGAGGTTGAAGCGGCATGGAAAGAGTTTGCC
1000 GAGGATGACTGCTGCTGCATTGACGTTGAGCGAAAACGCACGTTTACCATGATGATTTCGGGAAGGTGTGGCCATGCACGCCTTTAACGGTGAAC TGTTCG
1100 TTCAGGCCACCTGGGATACCAGTTCGTGCGGGCTTTTCCGGACACAGTTCCGGATGGTCAGCCCGAAGCGCATCAGCAACCCGAAACAATACCGCGGACAG
```

FIG. 20(B)

1200 CCGGAACTGCCCGTGTGCAGATTAAATGACAGCGGTGCGGCGCTGGGATATTACGTACGCGAGGACGGGTATCCTGGCTGGATGCCGCAGAAATGG
1300 ACATGGATACCCCGTGAGTTACCCGGCGGCTCGTTCATTACGTTTTTGAACCCGTGGAGGACGGGCAGACTCGCGGTGCAAATGTGTTTTACAGCGTGA
1400 TGGAGCAGATGAAGATGCTCGACACGCTGCAGAAACAGCAGCTAGATTAAACCCTAGAAAGATAATCATATTTGTGACGTACGTTAAAGATAATCATCGCGTA
1500 AAATTGACGCATGGGATCCACTAGTGTTCACCAATGGTTAATTCGAGCTCGCCCCGGGATCTAATTCAATTAGAGACTAATTCAATTAGAGCTAATTCA
3XP3-EYFP MARKER
1600 ATTAGGATCCAAGCTTATCGATTTCGAACCCCTCGACCCGCGGAGTATAAATAGAGCGGCTTCGTCTACGGAGCGACAATTCAATTCAAAACAAGCAAAAGTG
3XP3-EYFP MARKER
1700 AACACGTCGCTAAGCGAAAGCTAAGCAATAAACAAGCGCAGCTGAACAAGCTAAACAATCGGGGTACCGCTAGAGTCGACGGTAGCATCCACCGGTCCGC
3XP3-EYFP MARKER
1800 CACCATGGTGAGCAAGGGCGAGGAGCTGTTACCCGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGGACGTAAACGGCCACAAGTTCAGCGTGTCCGGC
3XP3-EYFP MARKER
1900 GAGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCCTGAAGTTTCATCTGCACCCACCGCAAGCTGCCCGTGCCCTGGCCCCACCCCTCGTGACCACCTTCG
3XP3-EYFP MARKER
2000 GCTACGGCCTGCAGTGCTTCGCCCGCTACCCCGACCATGTAAGCAGCAGCAGCTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCAT
3XP3-EYFP MARKER
2100 CTTCTTCAAGGACGCGCAACTACAAGACCCGCGGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAG
3XP3-EYFP MARKER

FIG. 20(B) CONT.

2200
 GAGGACGGCAACATCCTGGGGCAAGAAGCTGGAGTAACTACAACAGCCACAACGTCCTATATCATGGCCGACAAGACGACATCAAGGTGAAC
 3XP3-EYFP MARKER
 >

2300
 TCAAGATCCGGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCGGACCACTACCAGCAGACAACCCCCCATCGGCGACGGCCCCGTGCTGCTGCCCCGACAA
 3XP3-EYFP MARKER
 >

2400
 CCACTACCTGAGCTACCACTCCGCCCTGAGCAAGAGACCCCAACGAGAAGCGCGATCACATGGTCTGCTGGAGTTCTGTGACCGCCGCGGGATCACTCTC
 3XP3-EYFP MARKER
 >

2500
 GGCAATGGACGAGCTGTACAAGTAAAGCGGCGGACTCTAGATCATATAATCAGCCATACCACATTTGTAGAGGTTTACTTGCTTTAAAAACCTCCACACA
 3XP3-EYFP MARKER
 >

2600
 CCTCCCCCTGAACCTGAAACATAAATGAATGCAATTGTTGTTGTTAACTGTTTATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAAT
 3XP3-EYFP MARKER
 >

2700
 TTCACAAATAAAGCATTTTTTCACTGCATTCTAGTTGTGGTTTGTCCTCAAACTCATCAATGTATCTTAAAGCTTATCGATACGGTACGGCGCGCCTAGG
 3XP3-EYFP MARKER
 >

2800
 CCGGCCGATCACTAGTTCTAGAGCGGGCCGCCGCGGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAATTTCGAGCTTGGCGTAATCATGGTC
 >

2900
 ATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAAATCCACACAACATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGTGCCCTAATGAGTGAGC
 3000
 TAACTCACATTAATTGCGTTGCGCTCACTGCCCCGCTTCCAGTCGGGAACCTGTCTGTCAGCTGCATTAATGAATCGGCCAACCGCGGGGAGAGCGC

FIG. 20(B) CONT.


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|
3100 GTTTGCGTATTGGGCGCTCTTCCGCTTCCTCGCTCACTGACTCGCTCGGCTCGGTTCGCTGCGGCGAGCGGTATCAGCTCACTCAAAGGCGGTAAT
3200 ACGGTTATCCACAGAAATCAGGGGATAACGCAGGAAGAACAATGTAGCAAAAGGCCAGAACCGTA AAAAGGCCGCTTGCTGGCGTTT
3300 TTCCATAGGCTCCGCCCCCTGACGAGGATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCC
3400 CTGGAAGCTCCCTCGTGGCTCTCCTGTTCGACCCCTGCCGCTTACCGGATACCTGTCCGCTTCTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTC
3500 ACGTGTAGGTATCTCAGTTCGGTGTAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCCGACCGCTGCGCCTTATCCGGTAAC
3600 TATCGTCTTGAGTCCAAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAG
3700 AGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGACAGTATTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAAGAGTTGGTAG
3800 CTCTTGATCCGGCAACAAACCCGCTGGTAGCGGTGTTTTTTTGTTC AAGCAGCAGATTACGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTTG
3900 ATCTTTTCTACGGGCTCTGACGCTCAGTGGAAACGAAAACTCACGTTAAGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAA
4000 ATTAAAAATGAAGTTTAAATCAATCTAAAGTATATATAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTG
4100 TCTATTTCGTTCCATAGTTGCCTGACTCCCCCGTGTAGATAACTACGATACGGGAGGCTTACCATCTGGCCCCCAGTGCTGCAATGATACCGCGA
      AMPICILLIN RESISTANCE
      AMPICILLIN RESISTANCE
>

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FIG. 20(B) CONT.

4200
 GACCCACGCTCACCGGCTCCAGATTTATCAGCAATAAACAGCCAGCCGGAAGGCCGAGCGCAGAAAGTGGTCTGCAACTTTATCCGGCCTCCATCCAGT
 AMPCILLIN RESISTANCE >
 4300
 CTATTAAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAAGTTTGGCGAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGGCTCGTC
 AMPCILLIN RESISTANCE >
 4400
 GTTTGGTATGGCTTCATTTCAGCTCCGGTTCCTCAACGATCAAGCGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTAGCTCCTTCGGTCCCTCCG
 AMPCILLIN RESISTANCE >
 4500
 ATCGTTGTCAGAAGTAAGTTGGCCGCAGTGTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCTATGCCATCCGTAAGATGCTTTTCIG
 AMPCILLIN RESISTANCE >
 4600
 TGA CTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGATGCGGCGACCGAGTTGCTCTTGTGCCCCGGGTCAATACGGGATAATACCGCGCCACATAG
 AMPCILLIN RESISTANCE >
 4700
 CAGAACTTTAAAAGTGCTCATCATTTGGAAAACGTTCTTCGGGGCGAAAACCTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGT
 AMPCILLIN RESISTANCE >
 4800
 GCACCCCACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGCACAC
 AMPCILLIN RESISTANCE >
 4900
 GGAAATGTTGAATACTACTCTTCCCTTTTCAATATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTATTAGAA
 AMPCILLIN RESISTANCE >
 AAATAAACAAATAGGGGTTCCGGCGCACATTTCCCCGAAAAGTGC-- (SEQ ID NO:56) --

FIG. 20(B) CONT.

pBSII-Act5c-orf

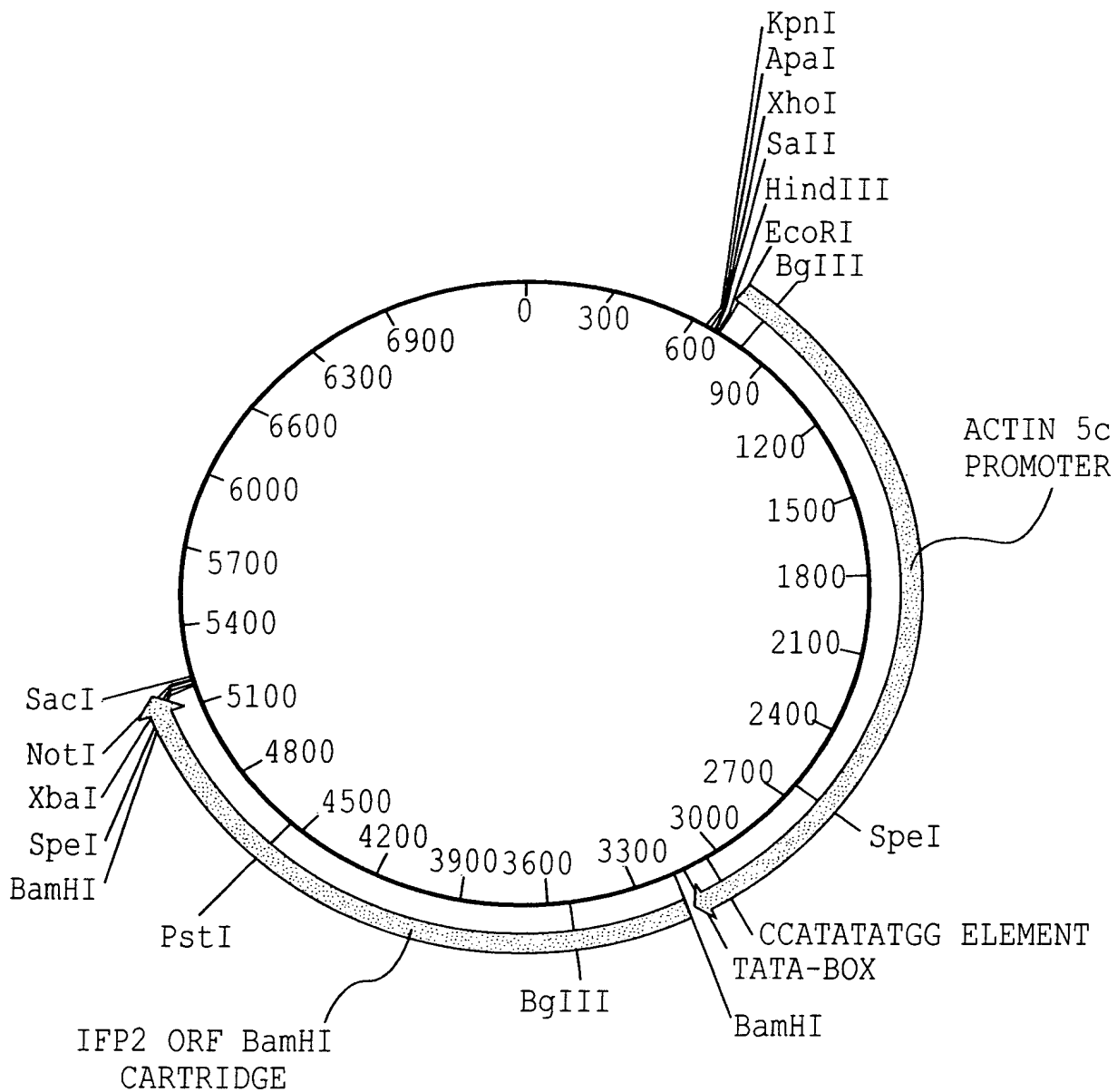


FIG. 21A

pBSII-Act5c-orf
Sequence Range: 1 to 7411

```

100 CTAAATTGTAAGCGTTAATATTTTGTAAAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTTAAACCAATAGGCCGAAATCGGCAGAAATCCCTTAT
200 AAATCAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCCAGTTTGGACAAGAGTCCACTATTAAAGAACGTGGACTCCAACGTCAAAGGGCGGAAAAA
300 CCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCCTAATCAAGTTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAG
400 CCCCCGATTTAGAGCTTGACGGGGAAGCCGGCGAACGTGGCGAGAAAGGAAGGAAGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCG
500 GTCACGCTGGCGGTAACCAACACACCCGCCGCGCTTAATGCGCGCGCTACAGGGCGCGTCCCATTGCGCATTCAGGCTGCGCAACTGTTGGGAAGGGCGAT
600 CGGTGGGGCCCTCTTCGCTATTACGCCAGCTGGCGAAAGGGGGATGTGCTGCAAGCGGATTAAGTTGGGTAACGCCAGGGTTTCCCAGTCACGACGTTG
700 TAAACGACGGCCAGTGAGCGCGGTAATACGACTCACTATAGGCGGAATTGGGTACCGGGCCCCCTCGAGGTCGACGGTATCGATAAGCTTGATATC
800 GAATTCTAAAAAATCATGAATGGCATCAACTCTGAATCAAATCTTTCAGATGCACCTACTTCTCATTTCCACTGTCACATCATTTTCCAGATCTCG
ACTIN 5C PROMOTER
900 CTGCCTGTTATGTGGCCCAACAACGACACGTTTATGGCCATTAAAGCTGGCTGATCGTCGCCAACACCAATAACATATGTACATTTCGAG
ACTIN 5C PROMOTER
1000 AAAGACCGATCAAAGAAGCGTCTTCGGCGGAGTAGGAGAAATCGGGAGGAGAAAGGAGACGAGCTGATCTAGTATCTCTCCACAATCCAATGCCAACTGA
ACTIN 5C PROMOTER

```

FIG. 21(B)

1100 CCAACTGGCCATATTCGGAGCAATTGAAGCCAATTTCCATCGCCTGGCGATCGCTCCATTCTTGGCTATATGTTTTTCACCGTTCCCGGGGCCATTTTC
 ACTIN 5C PROMOTER >
 1200 AAAGACTCGTCGGTAAGATAAGATTGTGTCACTCGCTGTCCTCTTCAATTGTCGAAGAATGCTGAGGAATTCGCGATGACGTGCGGAGTATTTTGAA
 ACTIN 5C PROMOTER >
 1300 GAATGAGAATAATTGTATTTATACGAAATCAGTTAGTGAATTTCTACAAAACATGTTATCTATAGATAAATTTGTTGCAAAATATGTTGACTATG
 ACTIN 5C PROMOTER >
 1400 ACAAGATTGTATGTATATACCTTTAATGTATTCTCATTTTCTTATGTATTTATAATGGCAATGATGATACTGATGATATTTTAAGATGATGCCAGACCA
 ACTIN 5C PROMOTER >
 1500 CAGGCTGATTTCTGCGTCTTTTGCCGAACGCAGTGCAATGTGCGGTGTTGTTTTTGGAAATAGTTTCAAATTTTCGGACTGTCGCTTTGATTTCACTTC
 ACTIN 5C PROMOTER >
 1600 TTGGCTTATTCAAAAAGCAAAGTAAAGCCAAAAAAGCGAGATGGCAATACCAATGCGGCAAAACGGTAGTGGAAGGAGGGTGCGGGGCAGCGGAAG
 ACTIN 5C PROMOTER >
 1700 GAAGGTTGGGGGGGGCGTGGCGGGTCTGTGGCTGGGCGGACGTACCGACGTTGGAGCCACTCCTTTGACCATGTGTGCGTGTGTATTATTCGTG
 ACTIN 5C PROMOTER >
 1800 TCTCGCCACTCGCCGGTTGTTTTTTTCTTTTATCTCGCTCTCTCTAGCGCCATCTCGTACGATGCTCAACGCCGCAATGTTGCCGTGTCCTTTATGCG
 ACTIN 5C PROMOTER >
 1900 GTCATTTTGGCTCGAAATAGGCAATTATTTAAACAAAGATTAGTCAACGAAACGCTAAATAAATAAGTCTACAATATGGTTACTTATTGCCCATGTGTG
 ACTIN 5C PROMOTER >

FIG. 21(B) CONT.

2000
 TGCAGCCACGATAGCAACAAAGCAACACAGTGGCTTCCCTCTTTCACCTTTTGTGCAAGCGGTGCGAGCAAGACGGCAGCCGCAACG
 ACTIN 5C PROMOTER >

2100
 CAATTACGCTGACAAAGAGCAGACGAAGTTTGGCCGAAAAACATCAAGGCGCTGATACGAATGCATTGCAATAACAATTGCGATATTAAATATTGT
 ACTIN 5C PROMOTER >

2200
 TATGAAGCTGTTGACTTCAAAACACACAAAAAAAATAAAACAAATTATTTGAAAGAGAAATTAGGAATCGGACAGCTTATCGTTACGGGCTAACAGC
 ACTIN 5C PROMOTER >

2300
 ACACCGAGACGAAATAGCTTACCTGACGTCACAGCCTCTGGAAGAACTGCCGCCAAGCAGACGATGCAGAGGACGACACATAGAGTAGCGGAGTAGGCCA
 ACTIN 5C PROMOTER >

2400
 GCGTAGTACGATGTGCTGTGTGAGGCGTCTCTCTCTTCGTCCTCCTGTTTGGCAACCGCATAGACTGCACTGAGAAAATCGATTACCTATTTTAA
 ACTIN 5C PROMOTER >

2500
 TGAATGAATATTGCACATACTACTATTCAAAACTATTAAAGATAGCAATCACATTCAATAGCCAAATACTATACCCTGAGCGATGCAACGAAATGATCA
 ACTIN 5C PROMOTER >

2600
 ATTTGAGCAAAAATGCTGCATATTTAGGACGGCATCATTAAGAAATGCTTCTTGCTGTGTACTTTTCTCTCGTCTGGCAGCTGTTTCGCCGTTATTGTT
 ACTIN 5C PROMOTER >

2700
 AAAACCGGCTTAAGTAGGTGTGTTTCTACGACTAGTGATGCCCTACTAGAAAGATGTGTGTGCACAAAATGTCCCTGAATAACCAATTTGAAGTGCAG
 ACTIN 5C PROMOTER >

2800
 ATAGCAGTAAACGTAAGCTAATGAATATTATTTAACTGTAATGTTTAAATATCGCTGGACATTACTAATAAACCCACTATAAACACATGTACATATGT
 ACTIN 5C PROMOTER >

FIG. 21(B) CONT.

```

2900 ATGTTTGGCATACAATGAGTAGTTGGGGA AAAATGTGTAAAAGCACCGTGACCATCACAGCATAAAGATAACCAGCTGAAGTATCGAATATGAGTAAC
      ACTIN 5C PROMOTER
3000 CCCCAAATTGAATCACATGCCGCAACTGATAGGACCCCATGGAAAGTACACTCTTTCATGGCGATATACAAGACACACACAGCACGAACCCAGTTGCGGGA
      ACTIN 5C PROMOTER
      >CCATATATGG element
3100 GGA AATTCTCCGTAAATGAA AACC CAATCGGCGAACAATT CATACCCATATATGGTAA AAGTTTGAACGCGACTTGAGAGCGGAGAGCATTCGCGGCTGA
      ACTIN 5C PROMOTER
      >TATA-box
3200 TAAGGTTT TAGCGCTAAGCGGGCTTTATAAAACGGGCTGCGGGACCAGTTTTCATATCCGATCCCTATATAATAAAATGGGTAGTTCTTTAGACGATGAGC
      ACTIN 5C PROMOTER
      >
      IFP2 ORF BAMHI CARTRIDGE
3300 ATATCCCTCTGCTCTTCTGCAAAGCGATGACGAGCTTGTGGTGAGGATTCTGACAGTGAAATATCAGATCACGTAAGTGAAGTGAAGTCCAGAGCGGA
      IFP2 ORF BAMHI CARTRIDGE
3400 TACAGAAGAAGCGTTTATAGATGAGGTACATGAAGTGCAGCCCAACGTCAAGCGGTAGTGAAATATTAGACGAAACAAAATGTTATTGAACAACCCAGGTTCT
      IFP2 ORF BAMHI CARTRIDGE
3500 TCATTGGCTTCTAACAGAAATCTTGACCTTGCCACAGAGGACTATTAGAGGTAAGATAAACAATTGTTGGTCAACTTCAAAGTCCACGAGGCGTAGCCGAG
      IFP2 ORF BAMHI CARTRIDGE

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FIG. 21(B) CONT.

3600
 TCTCTGCACTGAACATTGTCAGATCTCAAAGAGGTCACGCGTATGTCCGCAATATATATGACCCACTTTTATGCTTCAAACATATTTTACTGATGA
 IFP2 ORF BAMHI CARTRIDGE >

3700
 GATAATTTCGGAAATTGTAAATGGACAAATGCTGAGATATCATTTGAAACGTCGGGAATCTATGACAGGTGCTACATTTTCGTGACACGAATGAAGATGAA
 IFP2 ORF BAMHI CARTRIDGE >

3800
 ATCTATGCTTTCTTTGGTATTCTGGTAATGACAGCAGTGAGAAAAGATAAACACATGTCCACAGATGACCTCTTTTGATCGATCTTTGTCAATGGTGTACG
 IFP2 ORF BAMHI CARTRIDGE >

3900
 TCTCTGFAATGAGTCGTGATCGTTTTTGATTTTGTATACGATGCTTTAGAAATGGATGACAAAAAGTATACGGCCACACTTCGAGAAAAACGATGTATTAC
 IFP2 ORF BAMHI CARTRIDGE >

4000
 TCCTGTTAGAAAAAATATGGGATCTCTTTATCCATCAGTGCATACAAAAATTACACTCCAGGGGCTCATTTGACCATAGATGAACAGTTACTTGGTTTGTAGA
 IFP2 ORF BAMHI CARTRIDGE >

4100
 GGACGGTGTCCGTTTAGGATGTATATCCCAAACAAGCCCAAGTAAGTATGGAATAAAAAATCCTCATGATGTGTGACAGTGGTACGAAATATATGATAAAATG
 IFP2 ORF BAMHI CARTRIDGE >

4200
 GAATGCCCTTATTGGGAAGAGGAACACAGACCAACGGAGTACCACCTCGGTGAATACTACGTGAAGGAGTTATCAAAGCCTGTGCACGGTAGTTGTCTGTAA
 IFP2 ORF BAMHI CARTRIDGE >

4300
 TATTACGTGTGACAAATTGGTTCAACCTCAATCCCTTTGGCAAAAACTTACTACAAGAACCGTATAAGTTAACCATTTGTGGGAACCGTCCGATCAAACAAA
 IFP2 ORF BAMHI CARTRIDGE >

4400
 CGCGAGATACCGGAAGTACTGAAAAACAGTCGCTCCAGGCCAGTGGGAACATCGATGTTTTGTTTACGGACCCCTTACTCTCGTCTCATATAAACCGA
 IFP2 ORF BAMHI CARTRIDGE >

FIG. 21(B) CONT.

4500 AGCCAGCTAAGATGGTATACTTATTATCATCTTGTGATGAGGATGCTTCTATCAACGAAAGTACCGGTAAACCGCAAAATGGTTATGTATTATAATCAAAC
 IFP2 ORF BAMHI CARTRIDGE >

 4600 TAAAGCGGAGTGGACACGCTAGACCAAAATGTGTTCTGTGATGACCTGCCAGTAGGAAGACGAAATAGGTGGCCTATGGCATTTATTGTACGGAATGATAAAC
 IFP2 ORF BAMHI CARTRIDGE >

 4700 ATTGCCTCGCATAAAATTCCTTTTATTATATACAGCCATAAATGTCAGTAGCAAGGGAGAGAAAGGTTCAAAGTCGCAAAAAATTTATGAGAAACCTTTACATGA
 IFP2 ORF BAMHI CARTRIDGE >

 4800 GCCTGACGTCATCGTTTATGCGTAAGCGTTTAGAAGCTCCCTACTTTGAAGAGATATTTGCCGCGATAATATCTCTAATATTTTGGCCAAATGAAGTGCCTGG
 IFP2 ORF BAMHI CARTRIDGE >

 4900 TACATCAGATGACAGTACTGAAGAGCCAGTAATGAAAAAACGTACTTACTGTACTTACTGCCCTCTAAAAATAAGCGAAAGGCAAAATGCATCGTGCAAA
 IFP2 ORF BAMHI CARTRIDGE >

 5000 AAATGCAAAAAAGTTATTGTGCGAGAGCATAAATATTGATATGTGCCAAAGTTGTTTCTGACTGACTAATAAGTATAATTTGTTTCTATTATGTATAAGTT
 IFP2 ORF BAMHI CARTRIDGE >

 5100 AAGCTAATTACTTATTTTATAATACAACATGACTGTTTTTAAAGTACAAAAATAAGTTTATTTTGTGTAAGAGAGAGAATGTTTAAAGTTTTTGTACTTTA
 IFP2 ORF BAMHI CARTRIDGE >

 5200 GAAGAAATTTTGAGTTTTTGTTTTTTTTTTAAATAAAATAAAATAAATTTGTTGTTGAATTTGGATCCACTAGTCTTAGAGCGGCCGCCACCGC
 IFP2 ORF BAMHI CARTRIDGE >

 5300 GGTGGAGCTCCAGCTTTTGTTCCTTTAGTGAGGGTTAATTGGCGCGCTTGGCGTAATCATGTGTCATAGCTGTTTCCCTGTGTGAAATTTGTTATCCGCTCAC

FIG. 21(B) CONT.

5400 AATTCCACACAATACGAGCCGGAAGCATAAAGTGTAAGCCTGGGGTGCCCTAATGAGTGAGCTAACTCACATTAAATTGCGTTGCGCTCACTGCCCGCT
5500 TTCCAGTCGGGAAACCTGTCTGTCCAGCTGCATTAAATGAATCGGCCAACGCGCGGGAGAGCGGTTTGGGTATTGGGCGCTCTTCCGCTTCCCTCGCTCA
5600 CTGACTCGCTCGGCTCGGTTCGGCTGCGCGGAGCGGTATCAGCTCACTCAAAGCGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAA
5700 GAACATGTAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAGCCGCTTGCTGGCGTTTTCCTATAGGCTCCGCCCCCCTGACGAGCATCACAAA
5800 AATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCCTCGTGGGCTCTCCTGTTCGACCC
5900 TGCCGCTTACCGGATACCTGTCCGCTTCTCCCTTCGGGAAGCGTGGCGCTTCTCATAGCTCACGCTGTAGGTAATCTCAGTTCGGTGTAGGTCGTTCTG
6000 CTCCAAGCTGGGCTGTGTGCACGAACCCCGCTTACGCCCCGACCGCTGCGCCTTATCCGGTAACATACTGCTCTTGAGTCCAACCCGGTAAGACACGACTTA
6100 TCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTA
6200 GAAGGACAGTATTGGTATCTGGGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAACAACCCGCTGGTAGCGG
6300 TGGTTTTTTTGTGCAAGCAGCAGATTACGGCGCAAAAAAGGATCTCAAGAAGATCCCTTGTATCTTTTCTACGGGGTCTGACGCTCAGTGGAAACGAA
6400 AACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAAGGATCTTCACCTAGATCCCTTTTAAATTAATAAGAGTTTAAATCAATCTAAAGTATAT
6500 ATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCTGTTTCATCCATAGTTGCCCTGACTCCCCGT

FIG. 21(B) CONT.

6600 CGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTATCAGCAATA
6700 AACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCTCTGCAACTTTATCCGGCTCCATCCAGTCTATTAAATTGTTGCCGGGAAGCTAGAGTAAGTAGTT
6800 CGCCAGTTAATAGTTTGGGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCAAGCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCTCAACG
6900 ATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAAGAATAAGTTGGCCGCGAGTGTATCA
7000 CTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCTATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAAT
7100 AGTGTATGCCGGCACCAGTTGCTCTTGGCCCGCGTCAATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAGTGCTCATCATTTGGAAAACGTTT
7200 TTCGGGGCGAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTCACC
7300 AGCGTTTCTGGTGAGCAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATCTCTTCCTTTTCAAT
7400 ATTATTGAAGCATTATCAGGGTTATTGTCTCATGAGCGGATACATATTGAAATGATTTAGAAAAATAAACAAATAGGGGTTCCGGCGCACATTTCCCCCG
AAAAGTGCCAC -- (SEQ ID NO:67) --

FIG. 21(B) CONT.

Sequence Range: 1 to 10333

```
100 AAGCTTGGGCTGCAGGTCGACGGATCCAAATTCAACAACAATTTATTATTATGTTTATTATTATTAATAAAAAACAATAATTTCTCTAAAG
200 TAACAAAACCTTTTAAACATTCTCTCTTTTACAAAATAAACTTATTTGTACTTTTAAAAACAGTCATGTTGTATTATAAAATAAGTAATTAGCTTAACCT
300 ATACATAATAGAAACAAATTATACCTTATTAGTCAGTCAGAAACAACCTTTGGCACATATCAATATTATGCTCTCGACAAATAACTTTTTTGCATTTTTTGC
< _____ PIGYBAC ORF _____
400 ACGATGCATTTGCCCTTTCGCCCTTATTTTAGAGGGGCAGTAAGTACAGTAAGTACGTTTTCATTACTGGCTCTTCAGTACTGTGATGTACCAGG
< _____ PIGYBAC ORF _____
500 CACTTCATTTGGCAAAATATTAGAGATATTATCGCGCAAAATATCTCTTCAAAGTAGGAGCTTCTAAACGCTTACGCATAAACGATGACGTCAGGCTCATG
< _____ PIGYBAC ORF _____
600 TAAAGGTTTCTCATAAAATTTTGGGACTTTGAACCTTTTCTCCCTTGCTACTGACATTAAGGCTGTATATAATAAAAGAATTTATGCAGGCAATGTTTA
< _____ PIGYBAC ORF _____
700 TCATTCCGTACAATAATGCCATAGGCCACCCTATTTCGCTCTCCCTACTGCAGGTCATCACAGAACACATTTGGTCTAGCGTGTCCACTCCGCCCTTAGTTTG
< _____ PIGYBAC ORF _____
800 ATTATAATACATAACCATTTCGGGTTTACCGGTACTTTCGTTGATAGAAGCATCCTCATCAACAAGATGATAATAAGTATACCATCTTAGCTGGCTTCGGT
< _____ PIGYBAC ORF _____
900 TTATATGAGACGAGATAAGGGTCCGTCAAACAAACATCGATGTTCCTCCACTGGCCTGGAGCGACTGTTTTTCAGTACTTCCGGTATCTCGCGTTTGT
< _____ PIGYBAC ORF _____
```

FIG. 22

1000
TTGATCGCACGGTTCCACACAATGGTTAACTTATACGGTTCTTGTAGTAAGTTTTTTGCCAAAGGATTGAGGTGAACCAATTGTCACACGTAATATTACG
< PIGYBAC ORF

1100
ACAACTACCGTGCACAGGCTTTGATAAATCCTTCACGTAGTATTCACCGAGTGGTACTCCGTTGGTCTGTGTTCCCTCTTCCCAATAAAGGCATTCCAATTT
< PIGYBAC ORF

1200
ATCATATACTTCGTACCACTGTCACACATCATGAGGATTTTATTCCATACTTACTTGGCTTGGTTGGGATATACATCCTAAACGGACACCGTCCTCTAA
< PIGYBAC ORF

1300
AACCAAGTAACTGTTCAATCTATGGTCAATGAGCCCTGGAGTGTAAATTTTGTATGCACTGATGGATAAAGAGATCCCATATTTTCTAACAGGAGTAAA
< PIGYBAC ORF

1400
TACATCGTTTTTCTCGAAGTGTGGGCCGTATACTTTTGTCAATCCATTCTAAAGACATCGTATCAAAAAATCAAAACGATCACGACTCATACAGAGACGTAC
< PIGYBAC ORF

1500
ACCATTGACAAAGATCGATCAAGAGGTCATCTGTGGACATGTGGTTATCTTTTCTCACTGCTGTCAATACCAGAAATCCAAAGCATAGATTTTCAT
< PIGYBAC ORF

1600
CTTCATTCGTGTCACGAAATGTAGCACCTGTCAATAGATTCCCGACGTTTCAATGATATCTCAGCAATTTGTCCATTTTACAATTTCCGAAATTTATCTCATC
< PIGYBAC ORF

1700
AGTAAAAAATAGTTTGAAGCATAAAGTGGGTCAATATATTGCGGCACATACCGGTCGGACCTCTTTGAGATCTGACAAATGTTCAGTGCAGAGACTCGG
< PIGYBAC ORF

1800
CTACGCCCTCGTGGACTTTGAAGTTGACCAACAATGTTTATTCTTACCTCTAATAGTCCCTCTGTGGCAAGGTCAAGATTCTGTAGAACCAATGAAGAAC
< PIGYBAC ORF

FIG. 22 CONT.

1900 CTGGTTGTTCAATAACATTTTGTTCGTCATAATATTTCACTACCGCTTGACGTTGGCTGCACCTTCATGTACCTCATCTATAAACGCTTCTTCTGTATCGCT
 < PIGYBAC ORF

2000 CTGGACGTCATCTTCACTTACGTGATCTGATATTTTCACTGTCAGAAATCCTCACCAACAAGCTCGTCATCGCTTTGCAGAAAGACAGAGAGGATATGCTCA
 < PIGYBAC ORF

2100 TCGTCTAAAGAACTACCCATTTTATATATAGGATCCCCGACACCAGACCAACTGGTAATGGTAGCGACCGGGCTCAGCTGGAAATTAGGCCCTTCTAGAC
 < PIGYBAC ORF

2200 CGCGGCCGCAGATCTGTTAACGAATTCCCAATTCCCTATTTCAGAGTTCTCTTCTTGATTCAATAATTACTTCTTGGCAGATTTTCAGTAGTTGCAGTTGA
 < HSP 70 PROMOTER

2300 TTTACTTGGTTCGTGGTTACTTTTAAATTGATTCACTTTAACTTGCACCTTACTGCAGATTGTTTAGCTTGTTCAGCTGCGCTTGTTTATTGCTTAGCTT
 < HSP 70 PROMOTER

2400 TCGCTTAGCGACGTGTTCACTTTTGCTTGTTTGAATTGTTCGCTCCGTAGACGAAGCGCTCTATTATATACTCCGGCGCTCTTTTCGCGAACATTCGA
 < HSP 70 PROMOTER

2500 GGCGCGCTCTCTCGAACCAACGAGAGCAGTATGCCGTTTACTGTGTGACAGAGTGAGAGCATTAGTGCAGAGGGGAGACCCAAAAAGAAAGAGAGA
 < HSP 70 PROMOTER

2600 ATAAACGAATAACGGCCAGAGAAATTTCTCGAGTTTCTTCTGCCAAACAATGACCTACCACAATAACCAGTTTGTTTGGGATTCTAGGGGGAATCGGGG
 < HSP 70 PROMOTER

2700 ATCAATTCTAGTATGTAGTTAATAAAACCCTTTTTTGGAGAAATGTAGATTTAAAAAACATAATTTTTTTTATTTTTTACTGCACCTGGATATCA
 <

FIG. 22 CONT.

2800 TTGAACCTTATCTGATCAGTTTTTAAATTTACTTCGATCCAAGGTATTGAAGTACCAGGTTCTTTTCGATTACCTCTCACTCAAAATGACATTCCACTCAA
2900 AGTCAGCGCTGTTTGCCCTCCTTCTCTGTCCACAGAAATATCGCCGTCTCTTTCCGCCGTCCGTCCGCTATCTCTTTCCGCCACCGTTTGTAGCGTTACCTA
3000 GCGTCAATGTCCGCCCTTCAGTTGCACCTTTGTACGGGTTTCGTGACGAAGCTCCAAGCGGTTTACGCCATCAATTAAACACAAAGTCTGTGCCAAAAC
3100 CCTCTCGCTTCTTATTTTGTGTTTGTGAGTGATTGGGGTGGTGATTGGTTTTTGGGTGGTAAGCAGGGGAAAGTGTGAAAAATCCCGGCAATGGGGC
3200 CAAGAGGATCAGGAGCTATTAAATTCGGGAGGCAGCAACACCCCATCTGCCGAGCATCTGAACAATGTGAGTAGTACATGTGCATACATCTTAAGTTAC
3300 TTGATCTATAGGAACTGCGATTGCAACATCAAAATTGTCTGGCGCGTGAGAACTGCGACCCACAAAAATCCCAACCGCAATCGCACAAAAATAGTGAC
3400 ACGAAACAGATTATTCTGGTAGCTGTGCTCGCTATATAAGACAATTTTAAAGATCATATCATGATCAAGACATCTAAAGGCATTTCATTTTCGACTACATT
3500 CTTTTTTACAAAAAATATAACAACCAGATATTTTAAGCTGATCCTAGATGCACAAAAATAAATAAAGTATAAACCTACTTCGTAGGATACTTCGTTTT
3600 GTTCGGGGTTAGATGAGCATAACGCTTGTAGTTGATATTTGAGATCCCCATATCATTCAGGGTGACAGCGGAGCGGCTTCGCAGAGCTGCATTAAACCAGG
3700 GCTTCGGGCAGGCCAAAAACTACGGCACGCTCCTGCCACCCAGTCCGCCGGAGGACTCCGGTTCAGGGAGCGGCCAACTAGCCGAGAACCTCACCTATGC
3800 CTGGCAATAATGGACATCTTTGGGGCGGTCAATCAGCCGGGCTCCGGATGGCGGCAGCTGGTCAACCCGGACACCGCGGACTATTCTGCACGAGCGGACAC
3900 ATACCGGGCCCCAGGAAACATTTTGCTCAAGAACGGTGAGTTTCTATTTCGCAGTCGGCTGATCTGTGTGAAATCTTAATAAAGGGTCCAATTACCAATTG

FIG. 22 CONT.

4000
 AAACTCAGTTTGC GGCGTGGCCCTATCCGGGCGGAAC TTTTGGCCCGTGATGGGCAGTTCGGTGCCGGAAGACGACCCTGCTGAATGCCCTTGCCCTTTTCGA
 4100
 TCGCCGCGAGGCCATCCAAGTATCGCCATCCGGGATGCGACTGCTCAATGGCCAACCTGTGGACGCCAAGGAGATGCAGGCCAGGTGGCCCTATGTCCAGC
 4200
 AGGATGACCTCTTTATCGGCTCCCTAACGGCCAGGGAACACCTGATTTTCCAGGCCATGGTGCGGATGCCACGACATCTGACCTATCGGCAGCGAGTGGC
 4300
 CCGCGTGGATCAGGTGATCCAGGAGCTTTCGCTCAGCAATGTCAGCACACGATCATCGGTGTGCCCCGGCAGGGTGAAAGGTCTGTCCGGCGGAGAAAGG
 4400
 AAGCGTCTGGCATTTCGCCTCCGAGGCACTAACCGATCCGCCCGCTTCTGATCTGCGATGAGCCCCACCTCCGGACTGGACTCATTTACCGCCCCACAGCGTCG
 4500
 TCCAGGTGCTGAAGAAGCTGTCCAGAGGGCAAGACCGTCATCCTGACCATTCATCAGCCGCTCTCCGAGCTGTTTGAGCTCTTTGACAAGATCCCTCT
 4600
 GATGGCCGAGGGCAGGGTAGCTTCTTGGGCACTCCACGGCAAGCCGTCGACTCTTTTCCTAGTGAGTTCGATGTGTTTATTAAAGGGTATCTAGCATT
 4700
 CATTACATCTCAACTCCCTATCCAGCGTGGGTGCCCAGTGCTCTACCAACTACAATCCGGCGGACTTTTACGTACAGGTGTGGCCGTTGTGCCCGGACGG
 4800
 GAGATCGAGTCCCGTGATCGGATCGCCAAGATATCCGACAATTTTGCTATTAGCAAAGTAGCCCGGATATGGAGCAGTGTGGCCACCAAAAATTTGG
 4900
 AGAAGCCACTGGAGCAGCCGGAGAAATGGGTACACCTACAAGGCCACCTGGTTCAATGCAGTTCGGGGCGTCTGTGGCGATCCTGGCTGTCCGTGCTCAA
 5000
 GGAACCACTCTCGTAAAGTCCGACTTATTTCAGACAACGGTGAGTGGTCCAGTGGAAACAAATGATATAACCGCTTACAATTCCTTGGAAACAAAATTCGC
 5100
 TAGATTTTAGTTAGAATTGCCTGATTCCACACCCCTCTTCTAGTTTTTTTCAATGAGATGTATAGTTTATAGTTTTTCAGAAAAATAAATAATTTTCATTAA

FIG. 22 CONT.

5200 CTCCGGAACATGTTGAAGATATGAATATTAATGAGATGCGAGTAACATTTTAATTTCAGATGGTTGCCATCTTGATTGGCCCTCATCTCTTTTGGGCCAAC
5300 AACTCAGCAAGTGGGCGTGATGAATATCAACGGAGCCATCTTCCTCTCCTGACCAACATGACCTTCAAAACGCTCTTGGCCACGATAAATGTAAGTCT
5400 TGTTTAGAATACATTTGCATATTAATAATTACTAACTTCTAATGAATCGATTAGGTGTTACCTCAGAGCTGCCAGTTTTTATGAGGGAGGC
5500 CCGAAGTCGACTTTATCGCTGTGACACATACTTTCTGGCAAAACGATTGCCGAATTACCGCTTTTCTCACAGTGCCCACTGGTCTTCACGGCGATTGCC
5600 TATCCGATGATCGGACTGCGGGCCGGAGTGCTGCACCTCTTCAACTGCCCTGGCGCTGGTCACTCTGGTGGCCAAATGTGTCAACGTCCTTCGGATATCTAA
5700 TATCCTGGCCAGCTCCTCGACCTCGATGGCGCTGTCTGTGGTCCGCCGGTTATCATACCAATTCCTGCTCTTTGGCGGCTTCTTCTTGAACCTCGGGGCTC
5800 GGTGCCAGTATACCTCAAATGGTTGTCGTACCTCTCATGGTTCGGTTACGCCAACGAGGGTCTGCTGATTAAACCAATGGGCGGACGTGGAGCCGGCGGAA
5900 ATTAGCTGCACATCGTCGAACACCACGTGCCCCAGTTCGGGCAAGGTCACTCTGGAGACGCTTAACTTCTCCGCCCGCGATCTGCCGTGGACTACGTGG
6000 GTCTGGCCATTCTCATCGTGAGCTTCCGGGTGCTCGCATATCTGGCTCTAAGACTTCGGGCCCGACGCAAGGAGTAGCCGACATATATCCGAAATAACTG
6100 CTTGTTTTTTTTTACCATTATTACCATCGTGTTTACTGTTTTATTGCCCCCTCAAAGCTAATGTAATTATATTGTGCCAATAAAAACAAGATATGA
6200 CCTATAGAATACAAGTATTTCCCTTCGAACATCCCCACAAGTAGACTTTGGATTGTCTTCTAACCAAAAGACTTACACACCTGCATACCTTACATCAA
6300 AAACTCGTTTATCGCTACATAAAACACCGGGATATATTTTTATATACATACTTTTCAAATCGGCGCCCTCTTCATAATTACCTCCACCACACCCACGT

FIG. 22 CONT.

6400
TTCGTAAGTTGCTCTTTTCGCTGTCTCCACCCGCTCTCCGCAACACATTCACCTTTTGTTCGACGACCTTGGAGCGACTGTCGTTAGTTCGCGCGGATTTCG
6500
GTTCCGCTCAAATGGTTCCGAGTGGTTCATTTTCGCTCAATAGAAATAGTAATAAATATTGTATGTACAAATTTATTGCTCCAATATATTGTATATAT
6600
TTCCTTCACAGCTATATTTATTTCTAATTAATATATGACTTTTAAAGGTAATTTTTTGTGACCTGTTCCGAGTATAGCGTTACAATTTGAACCTGAAA
6700
GTGACATCCAGTGTGTTGTTCCCTGTGTAGATGCATCTCAAAAAAATGGTGGGCATAATAGTGTGTTTATATATATCAAAAAATAACAACATAATAATAA
6800
GAATACATTTAATTTAGAAAATGCTTGGATTTCACTGGAAGTGAATTAATTCGGCTGCTGCTCTAAACGACGCAATTCGTACTCCAAAAGTACGAATTTT
6900
TTCCTCAAGCTCTTATTTTCAATTAACAATGAACAGGACCTAACGCACAGTCACGTTATTGTTTACATAAAATGATTTTTTTTACTATTCAAACCTTACTC
7000
TGTTTGTGTACTCCCACTGGTATAGCCTTCTTTTATCTTTTCTGTTTCAGGCTCTATCACTTTACTAGGTACGGCACTCGGTTGAGTCGCCCTCCTTTTA
7100
AATGCTGACCTTTTCAGGTGCAGCCTTCCACTGCCAATCTTTAAAGTGGGTATCACAAATTTGGGAGTTTTCACCAAGGCTGCACCCCAAGGCTCTGCT
7200
CCCACAAATTTCTCTTAATAGCACACTTCGGGCACGTGAATTAATTTTACTCCAGTCACAGCTTTGCAGCAAAATTTGCAATATTTTCATTTTTTTTATTTC
7300
CACGTAAGGTTAATGTTTTCAAAAAAATTCGTCCGCACACACCTTCCCTCTCAACAAGCAACGTCGCACTGAATTTAAGTGTATACTTCGGTAAGC
7400
TTCGGCTATCGACGGGACCACCTTATGTTATTTTCATCATGGGCCAGACCCACGTAAGTCCAGCGGAGATCGGCGGGGAGAGTTAAGCGTCTCCAGGAT
7500
GACCTTGCCCGAACTGGGGCACGTGGTGTTCGACGATGTGCAGCTAATTTGCCCCGGCTCCACGTCGCCGCCATTGGTTAATCAGCAGACCCCTCGTTGGCG

FIG. 22 CONT.

7600 TAACGGAAACCATGAGAGGTACGACAACCATTTGAGGTATACTGGCACCGAGCCCGAGTTCAGAAGAAGGCGTTTTCCATAGGCTCCGCCCCCTGACG
7700 AGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGGGCTCTCC
7800 TGTTCGGACCCCTGCCGCTTACCGGATACCTGTCCGCTTTCTCCCTTCGGGAAGCGTGGCGCTTCTCAATGCTCACGCTGTAGGTATCTCAGTTCGGTG
7900 TAGGTCGTTCCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTACAGCCCGACCGCTGGCCCTTATCCGGTAACATACTGCTCTTGAGTCCAACCCGGTAA
8000 GACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTAATGTAGCGGTGCTACAGAGTCTTGAAGTGGTGGCCTAACTA
8100 CGGCTACACTAGAGGACAGTATTTGGTATCTGGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAACAAACCCACC
8200 GCTGGTAGCGGTGGTTTTTTTGTTCGAAGCAGCAGATTACGGCGCAGAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGGTCTGACGCTC
8300 AGTGGAACGAAACTCACGTTAAGGATTTTGGTCATGAGATTATCAAAAAAGGATCTTCACCTAGATCCCTTTAAATTAAAAATGAAGTTTTTAAATCAAT
8400 CTAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCTCATCCATAGTTGCC
8500 TGAATCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATT
8600 TATCAGCAATAAACCCAGCCGCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCCTCCATCCAGTCTATTAAATTGTTGCCGGGAAGCTAG
8700 AGTAAGTAGTTCGCCAGTTAATAGTTTGGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACGGCTCGTCGTTTGGTATGGCTTCATTCAGCTCC

FIG. 22 CONT.

8800 GGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCG
8900 CAGTGTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTCAFGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTC
9000 ATTCTGAGAAATAGTGTATGCGGCGACCGAGTTGCTCTTGCCCGCGCTCAATAACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCAT
9100 GGAAAACGTTCTTCGGGGCGAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTT
9200 TTACTTTCACCAGCGTTTCTGGGTGAGCAAAACAGGAAGGCAAAATGCCCGCAAAAGGGAATAAGGGCGACACGGGAAATGTTGAATACTCATACTCTT
9300 CCTTTTCAATAATTATTGAAGCATTTATCAGGGTTATTGTCTCATGAGCGGATACATAATTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGGCGC
9400 ACATTTCCCGAAAGTGCCACCTGACGTCTAAGAAACCATTTATTATCATGACATTAACTATAAAATAGGCGTATCACGAGCCCCCTTTCGTCTCAGCGC
9500 GTTTCGGTGATACGGTGAACCTCTGACACATGCAGCTCCCGGAGACGGTCAACAGCTTGCTGTGAAGCGGATGCCGGGAGCAGACAAGCCCCGTCAGGG
9600 CGCGTCAGCGGGGTGTGGCGGGGTGTCGGGGCTGGCTTAACATATGCGGCATCAGAGCAGATTGTACTGAGAGTGCACCATAATGCGGTGTGAAATACCGCAC
9700 CGAATCGCGCGGAATAACGACAGTCGCTCCAAGGTCGTCGAACAAGGTGAATGTGTGCGGAGAGCGGGTGGGAGACAGCGAAAGAGCAACTACGAA
9800 ACGTGGTGTGGAGGTGAATTATGAAGAGGGCGCGGATTTGAAAAGTATGTATATAAAAAATATATCCCCGGTGTTTTATGTAGCGATAAACGAGTTT
9900 TTGATGTAAAGGTATGCAGGTGTGAAGTCTTTTGGTTAGAAAGACAAATCCAAAGTCTACTTGTGGGGATGTTCCGAAGGGGAAATACTTGTAATCTATAGG

FIG. 22 CONT.

1000 TCATACTCTTGTTTTTATTGGCACAAATATAATTACATTAGCTTTTGTAGGGGGCAATAAACAGTAAACACGATGGTAATAATGGTAAAAAAAACAAG
10100 CAGTTATTTCGGATATATGTCGGCTACTCCTTGCGTCGGGCCCCGAAGTCTTAGAGCCAGATATGCCGAGCACCCGGGAAGCTCACGATGAGAATGGCCAGAC
10200 CATGATGAAATAACATAAGGTGGTCCCGTCGGCAAGAGACATCCACTTAACGTATGCTTGCAATAAGTCCGAGTGAAGGAATAGTATTCTGAGTGTCTGT
10300 ATTGAGTCTGAGTGAGACAGCGATATGATTGTTGATTAAACCCTTAGCATGTCCGTGGGGTTTGAATTAACTCATATAATTAAATTAGACGAAATTATTTTT
AAAGTTTATTTTTTAATAAATTTCGGAGTACGCA -- (SEQ ID NO:68) --

FIG. 22 CONT.

Natural piggyBac orf	1	ATGGGTTAGTT	CTTTAGACGA	TGAGCATATC	CTCTCTGCTC	TTCTGCAAAG
Optimized piggyBac orf	1	ATGGGTAGca	gccTgGAtGA	TGAaCATATC	CTgagcGCgC	TgCTGCAGaG
Natural piggyBac orf	51	CGATGACGAG	CTTGTTGGTG	AGGATTCTGA	CAGTGAAATA	TCAGATCAGG
Optimized piggyBac orf	51	CGAcGAcGaa	CTgGTTGGTG	AaGATagcGA	cAGcGAAATc	agcGATCAGC
Natural piggyBac orf	101	TAAGTGAAGA	TGACGTCCAG	AGCGATACAG	AAGAAAGCGTT	TATAGATGAG
Optimized piggyBac orf	101	TgAGcGAAGA	cGAcGttcAG	AGCGATACcG	AAGAAAGCGTT	cATcGAcGaa
Natural piggyBac orf	151	GTACATGAAG	TGCAGCCCAAC	GTCAAGCGGT	AGTGAAATAT	TAGACGAACA
Optimized piggyBac orf	151	GttCACGAAG	TGCAGCCcGAC	cagcAGCGGT	AGcGAAATcc	TgGAtGAACA
Natural piggyBac orf	201	AAATGTTATT	GAACAACCAG	GTTCTTCATT	GGCTTCTAAC	AGAAATCTTGA
Optimized piggyBac orf	201	gAAcGTTATc	GAACAgCCgG	GTagcagcct	GGCgagcAAC	cGtATCctGA
Natural piggyBac orf	251	CCTTGCCACA	GAGGACTATT	AGAGGTAAGA	ATAAACATTG	TTGGTCAACT
Optimized piggyBac orf	251	CCcTGCCcGcA	GcGcACcATc	cGtGGTAAaa	AcAAACAcTG	TTGGagcACc
Natural piggyBac orf	301	TCAAAGTCCA	CGAGGCGTAG	CCGAGTCTCT	GCACTGAACA	TTGTCAGATC
Optimized piggyBac orf	301	agcAAaagCA	CccGcCGTAG	CCGtGTtagc	GCgCTGAACA	TTGTtcGtag
Natural piggyBac orf	351	TCAAAGAGGT	CCGACGCGTA	TGTGCCGCAA	TATATATGAC	CCACTTTTAT
Optimized piggyBac orf	351	cCAgcGtGGT	CCGACcCGTA	TGTGCCGCAA	cATcTAcGAt	CCgCTgcTgT
Natural piggyBac orf	401	GCTTCAAAC	ATTTTTTACT	GATGAGATAA	TTTCGGAAAT	TGTAAAAATGG
Optimized piggyBac orf	401	GCTTCAAAC	gTTcTTcACC	GATGAaATca	TcagcGAAAT	cGTgAAATGG

FIG. 23

Natural piggyBac orf	451	ACAAATGCTG	AGATATCATT	GAAACGTCGG	GAATCTATGA	CAGGTGCTAC
Optimized piggyBac orf	451	ACCAAACGCCG	AaATcagcCT	GAAACGTCGc	GAAagcATGA	CCGGcGCgAC
Natural piggyBac orf	501	ATTTCGTGAC	ACGAATGAAG	ATGAAAATCTA	TGCTTTTCTTT	GGTATTCTGG
Optimized piggyBac orf	501	cTTcCGcGAt	ACcAAcGAaG	ATGAaATCTA	cGCCtTCTTc	GGTATcCTGG
Natural piggyBac orf	551	TAAATGACAGC	AGTGAGAAAA	GATAACCACA	TGTCCACAGA	TGACCTCTTT
Optimized piggyBac orf	551	TgATGACcGC	gGTGcGtAAA	GATAACCACA	TGagCACcGA	TGAtCTgTTT
Natural piggyBac orf	601	GATCGATCTT	TGTCAATGGT	GTACGTCTCT	GTAATGAGTC	GTGATCGTTT
Optimized piggyBac orf	601	GATCGtagcc	TGagcATGGT	tTACGTtagc	GTTATGAGCC	GtGAcCGTTT
Natural piggyBac orf	651	TGATTTTTTG	ATACGATGTC	TTAGAAATGGA	TGACAAAAGT	ATACGGCCCCA
Optimized piggyBac orf	651	cGATTTTtcTG	ATcCGtTGTC	TgcGtATGGA	TGAtAAAAGc	ATcCGcCCgA
Natural piggyBac orf	701	CAC TTCGAGA	AAACGATGTA	TTTACTCCTG	TTAGAAAAAT	ATGGGATCTC
Optimized piggyBac orf	701	CcCTgCGcGA	AAACGATGTg	TTcACcCCgG	TTcGcAAAAAT	cTGGGATCTg
Natural piggyBac orf	751	TTTATCCATC	AGTGCATACA	AAATTACACT	CCAGGGGCTC	ATTGACCAT
Optimized piggyBac orf	751	TTcATCCAcC	AGTGCATcCA	gAAcTACAcC	CCgGGcGCgC	AcCTGACCAT
Natural piggyBac orf	801	AGATGAACAG	TTACTTGGTT	TTAGAGGACG	GTGTCCGTTT	AGGATGTATA
Optimized piggyBac orf	801	cGATGAACAG	cTgCTgGGTT	TTcGtGGtCG	cTGTCCGTTT	cGtATGTAcA
Natural piggyBac orf	851	TCCCAAAACAA	GCCAAGTAAG	TATGGAATAA	AAATCCTCAT	GATGTGTGAC
Optimized piggyBac orf	851	TCCCgAACAA	aCCgAGcAAa	TAcGGtATcA	AAATCCTgAT	GATGTGTGAC

FIG. 23 CONT.

Natural piggyBac orf	901	AGTGGGTACGA	AGTATATGAT	AAATGGAATG	CCTTATTGG	GAAGAGGAAC
Optimized piggyBac orf	901	AGcGGTACcA	AgTAcATGAT	cAAcGGtATG	CCgTATcTGG	GtcGtGGtAc
Natural piggyBac orf	951	ACAGACCAAC	GGAGTACCAC	TCGGTGAATA	CTACGTGAAG	GAGTTATCAA
Optimized piggyBac orf	951	cCAGACCAAC	GgTgTgCCgC	TgGGTGAATA	CTACGTGAaA	GAacTgagcA
Natural piggyBac orf	1001	AGCCTGTGCA	CGGTAGTTGT	CGTAATATTA	CGTGTGACAA	TTGGTTCCACC
Optimized piggyBac orf	1001	AaCCgGTGCA	CGGTAGcTGT	CGTAacATcA	CcTGTGACAA	cTGGTTCCACC
Natural piggyBac orf	1051	TCAATCCCCTT	TGGCAAAAAA	CTTACTACAA	GAACCGTATA	AGTTAACCAT
Optimized piggyBac orf	1051	agcATCCCgc	TGGCgAAAAA	CcTgCTgCAg	GAACCGTATA	AacTgACCAT
Natural piggyBac orf	1101	TGTGGGAACC	GTGCGATCAA	ACAAACGCGA	GATACCGGAA	GTACTGAAAA
Optimized piggyBac orf	1101	cGTGGGtACC	GtTcGtagcA	ACAAACGtGA	aAtcCCGGAA	GTgCTGAAAA
Natural piggyBac orf	1151	ACAGTCGCTC	CAGGCCAGTG	GGAACATCGA	TGTTTTGTTTT	TGACGGACCC
Optimized piggyBac orf	1151	ACAGcCGtag	CcGtCCgGTG	GGcACcagcA	TGTTcTGTTTT	cGAtGGtCCg
Natural piggyBac orf	1201	CTTACTCTCG	TCTCATATAA	ACCGAAGCCA	GCTAAGATGGT	TACTTATT
Optimized piggyBac orf	1201	CTgACcCTgG	TtagcTAcAA	ACCGAAaCCG	GCgAAaATGGT	gTACcTgct
Natural piggyBac orf	1251	ATCATCTTGT	GATGAGGATG	CTTCTATCAA	CGAAAGTACCG	TAAACCCGC
Optimized piggyBac orf	1251	gagcagcTGc	GAcGAaGAcG	CgagcATCAA	CGAAAGcACCG	GTAACCCGC
Natural piggyBac orf	1301	AAATGGTTAT	GTATTATAAT	CAAACATAAG	GCGGAGTGGAC	ACGCTAGAC
Optimized piggyBac orf	1301	AgATGGTTAT	GTAcTAcAAc	CAGACcAAAG	GCGGtGTGGAc	AcCcTgGAt

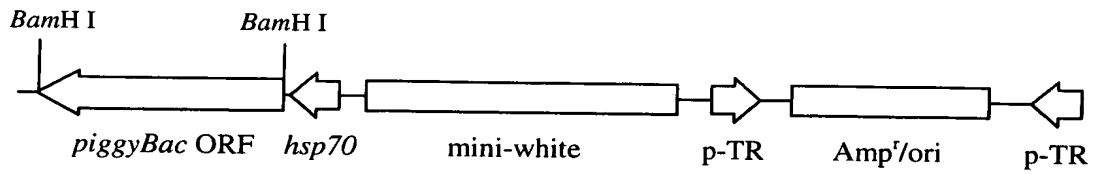
FIG. 23 CONT.

Natural piggyBac orf	1351	CAAATGTGTT	CTGTGATGAC	CTGCAGTAGG	AAGACGAATA	GGTGGCCTAT
Optimized piggyBac orf	1351	CAGATGTGca	gcGtTATGAC	CTGCAGccGc	AAaACcAAcc	GcTGGCCgAT
Natural piggyBac orf	1401	GGCATTATTG	TACGGAAATGA	TAAACATTGC	CTGCATAAAT	TCTTTTATTA
Optimized piggyBac orf	1401	GGCgcTgcTG	TACGGtATGA	TcAACATcGC	CTGCATcAAc	agcTTTATcA
Natural piggyBac orf	1451	TATACAGCCA	TAAATGTCAGT	AGCAAGGGAG	AAAAGGTTCA	AAGTCGCAAA
Optimized piggyBac orf	1451	TcTACAGCCA	TAAcGTtAGc	AGCAaAGGtG	AAAaAGTTCA	gAGccGCAAA
Natural piggyBac orf	1501	AAATTTATGA	GAAACCTTTA	CATGAGCCCTG	ACGTCAATCGT	TTATGCGTAA
Optimized piggyBac orf	1501	AAATTTATGc	GtAACCTgTA	CATGAGCCCTG	ACcagcagct	TcATGCGTAA
Natural piggyBac orf	1551	GCGTTTAGAA	GCTCCTACTT	TGAAGAGATA	TTTGCGCGAT	AATATCTCTA
Optimized piggyBac orf	1551	aCGTcTgGAA	GCcCCgACcc	TGAaAcGtTA	TcTGCGCGAT	AAcATCagca
Natural piggyBac orf	1601	ATATTTTGCC	AAATGAAGTG	CCTGGTACAT	CAGATGACAG	TACTGAAGAG
Optimized piggyBac orf	1601	AcATccTGCC	gAAcGAAGTG	CCgGGTACca	gcGATGAtAG	cACcGAAAGaa
Natural piggyBac orf	1651	CCAGTAATGA	AAAAACGTAC	TTACTGTACT	TACTGCCCCCT	CTAAAAATAAG
Optimized piggyBac orf	1651	CCgGTgATGA	AAAAACGTAC	cTACTGTACC	TACTGCCCCga	gcAAAAATccG
Natural piggyBac orf	1701	GCGAAAGGCA	AATGCATCGT	GCAAAAAATG	CAAAAAAGTT	ATTTGTGCGAG
Optimized piggyBac orf	1701	cCGtAAaGCg	AAcGCgagct	GCAAAAAATG	CAAAAAAGTT	ATcTGTGCGtG
Natural piggyBac orf	1751	AGCATAATAT	TGATATGTGC	CAAAGTTGTT	TCTGA--	ID NO:69) --
Optimized piggyBac orf	1751	AaCATAAcAT	cGATATGTGC	CaGAcTGTt	TCTGA--	(SEQ ID NO:70) --

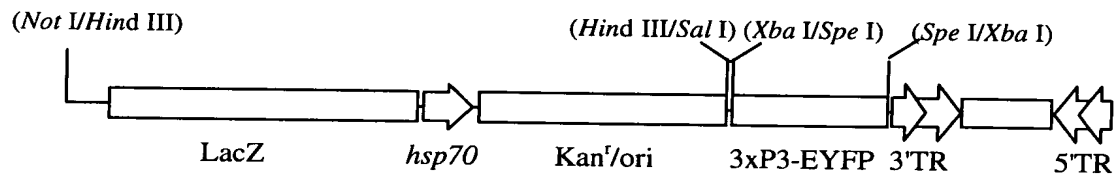
FIG. 23 CONT.

FIG. 24

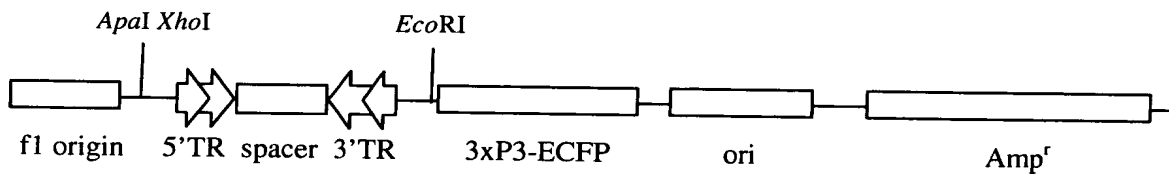
A. pCaSpeR-hs-orf



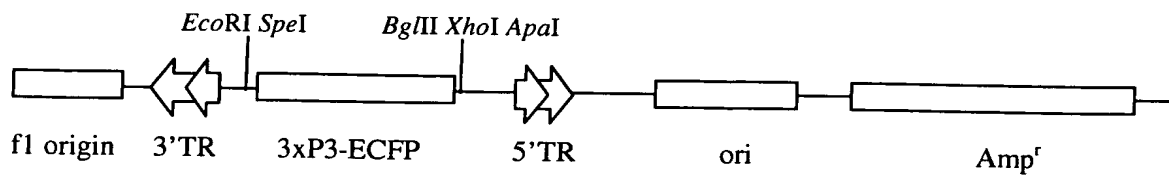
B. p(PZ)-Bac-EYFP



C. pBSII-ITR1.1k-ECFP



D. pXL-BacII-ECFP



pIAO-P/L-589bp

FIG. 25

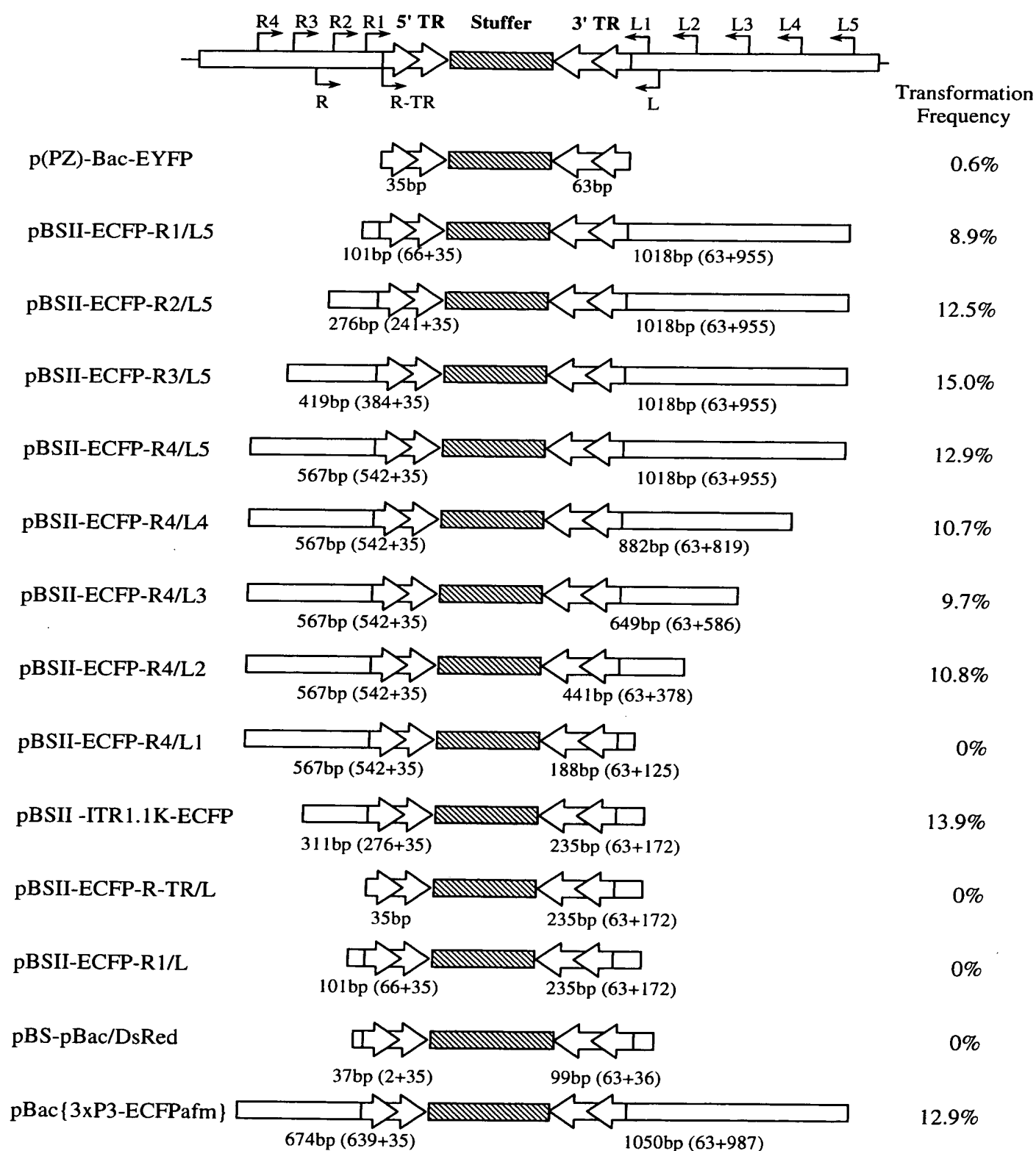
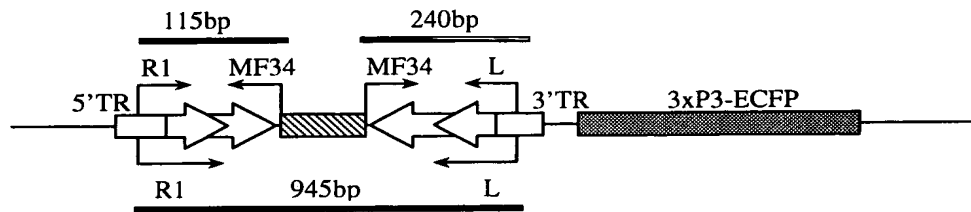


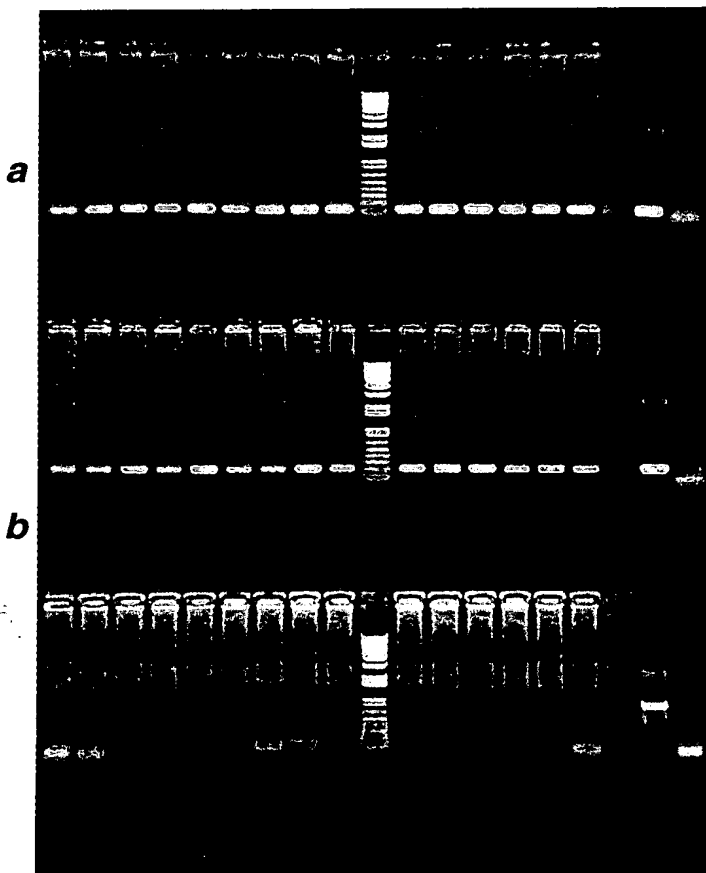
FIG. 26

A



B

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19



a: PCR using IFP2_R1 + MF34

b: PCR using IFP2_L + MF34

c: PCR using IFP2_R1 + IFP2_L

Lane 1-5: pBSII-ITR1.1K-ECFP

Lane 6-7: pBSII-ECFP-R1/L5

Lane 8-9: pBSII-ECFP-R2/L5

Lane 10: 1KB plus ladder (Invitrogen)

Lane 11: pBSII-ECFP-R3/L5

Lane 12: pBSII-ECFP-R4/L5

Lane 13: pBSII-ECFP-R4/L4

Lane 14: pBSII-ECFP-R4/L3

Lane 15: pBSII-ECFP-R4/L2

Lane 16: M23.1 *piggyBac* strain

Lane 17: w^{1118} white eye strain

Lane 18: pBSII-ITR1.1K-ECFP plasmid

Lane 19: No DNA

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